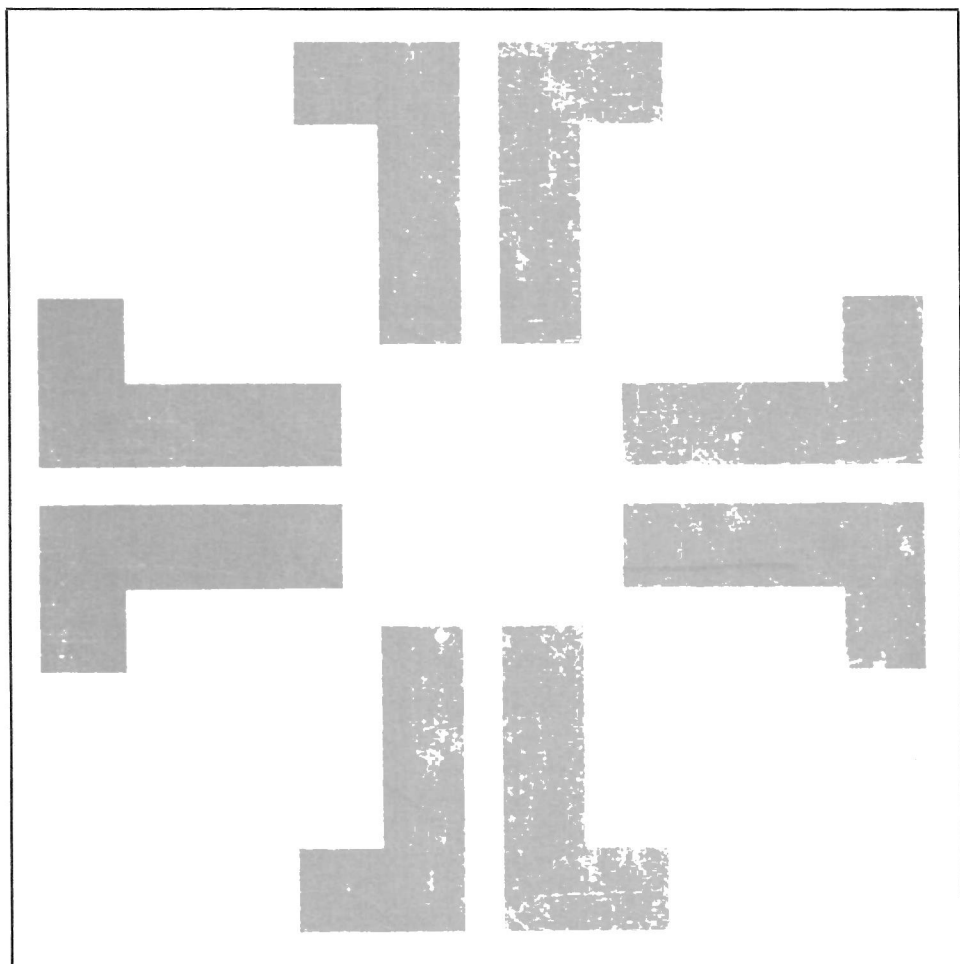


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**Language Typology:
A Historical and
Analytic Overview**



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LANGUAGE TYPOLOGY

A HISTORICAL AND ANALYTIC OVERVIEW

by

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PREFACE

This monograph is basically a revised version of the chapter "The Typological Method" to appear in *Current Trends in Linguistics* 11. The most important change is the addition of a brief final section setting forth the implications of a diachronic process approach to the typologizing of languages.

I am indebted to members of the Stanford Project on Universals for comments and criticisms of the earlier version as it will appear in *Current Trends* and in particular to Charles A. Ferguson for a critical reading of the manuscript in its present form.

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1. INTRODUCTION

Marouzeau (1931) in his well-known dictionary of linguistic terminology gives the following contextual definition of typology: "The typological study of languages is that which defines their characteristics in abstraction from history."¹ This definition deviates from the norm of definitional statements regarding linguistic typology in its absence of reference to typology as either a method of comparing languages or as a kind of classification. On the other hand, Marouzeau's statement is quite representative in its explicit exclusion of historical considerations.

The 'type' concept and the use of typological methods has, of course, far broader application than to linguistics alone. A comparison of linguistic theory and practice in typological matters with that of other disciplines shows that outside of linguistics attention to the non-historical character of typology is negligible. Regarding the first of the above two observations concerning Marouzeau's definitional statement, namely, the absence of reference to comparison and classification, later discussion will show that if typological procedures in linguistics are considered in a broader context of their diversity of employment over time in linguistics, then Marouzeau's abstinence in this regard is well justified and moreover is in consonance with the treatment of the type concept from a more general point of view than that of linguistics alone.

The purpose of these preliminary observations is to highlight the value both of a more general discussion of typology as an approach which transcends the boundaries of any particular science and of a

¹ "L'étude typologique des langues est celle qui définit leur caractères en faisant abstraction de l'histoire." This citation is from the third edition (1961). The first two were not available to me.

historical review of type concepts within linguistics itself. Accordingly the following chapter (2. The Logic of Typology) will be devoted to a general treatment of the notion of type while the chapter after that (3. The History of Typology) will consider the role of typology in linguistics from the historical point of view. The mutual implications of typology and the linguistic theory of the recent past will be considered in Chapter 4 (Typology and Grammatical Theory). Finally, since considerations pertaining to the relationship between typology and historical linguistics raise issues of far greater import than can be compassed by the negative though accurate characterization of typology as ahistorical, the final chapter (5. Typology and Diachrony) is concerned with that topic.

2. THE LOGIC OF TYPOLOGY

As a preface to the theoretical discussion, a few observations are offered concerning the history of the words 'type', 'typology', etc. A full treatment of the history of the type concept would easily require a volume and such a study seems never to have been made. The present treatment is obviously incomplete but it is hoped that it will prove useful and not excessively inaccurate.

Whereas the word 'type' and its equivalent in other languages is old and well established in a number of specialized and technical uses, the word family consisting of 'typology' and its various satellites (e.g. 'typological', 'typologist') is much more recent, particularly in its current social science usage.¹

There seems to be an implicational relationship among the various senses of 'type' and 'typology'. Namely, if x_1 is a particular sense of 'typology', then it implies a parallel sense y_1 , of 'type', but not vice versa. There are thus independent uses of the word 'type' in particular fields of discourse and during particular periods of time without the corresponding sense or even the occurrence of the term 'typology' at all. Thus Peirce, in elaborating his well-known type-token distinction, finds no need for a term 'typology'. Such a term seems to arise in particular where a variety of systems of types occur as alternative formulations so that the method itself tends to come under theoretical scrutiny. Thus the burgeoning of a whole series of analyses of the human personality into 'types' from the most various points of view (e.g. Jung, Binet, Kretschmer) in the early twentieth century evidently produced the need for some abstract term

¹ The word 'type' is taken from the Greek *týpos* < *týptein* 'to strike' hence 'a die', 'an image', and is already found as a technical term in ancient Greek philosophy. For a brief account, see Seiterich (1930).

referring to typological systems as such from about 1920 on.² In German in particular, with its rich resources of word formation, a number of rival terms made their appearance about the same time, e.g. *Typik*, *Typenlehre*, *Typenkunde*.

It is perhaps the more restricted domain of these as compared to *Typologie* with its possibility of ambiguity as to semantic level which led ultimately to the greater popularity of the latter. Thus one could speak of Jung's *Typologie* (introvert vs. extrovert) but not his *Typenkunde* since Jung evidently had no theories regarding the nature and construction of typologies.

Two meanings of 'typology', independent of social or natural science uses, should be noted which are considerably older. The OED, in a volume printed in 1933 but based on materials not reaching that date, defines one meaning of typology as "the study of or discourse on printing types or printing", with its first occurrence given as 1882. The other early use is in theology, where the corresponding sense of *type* already occurs in Ecclesiastical Greek. The article Typology in *Hasting's Encyclopedia of Religion and Ethics* (1922) considers only this sense, and defines it in the following terms: "Typology is the science, or rather, only too often, the curious art, of discovering and expounding in the records of persons and events in the OT prophetic considerations of the person of Christ or of the doctrine and practice of the Christian church." This usage is at least as old as the work of Patrick Fairbairn (1845-47) entitled *The Typology of Scripture*.

Only in archaeology does 'typology' seem to have been current in the nineteenth century in senses at least roughly coincident with those to appear later in the behavioral sciences. The earliest occurrence of 'typology' in archaeology cited in OED is 1886. Its existence in archaeology is understandable in view of what has until recently been the fundamental problem of that discipline, the evaluation of formal resemblances among artifacts in different sites as evidence of

² The earliest occurrence of the word 'typology' outside of the uses in typography, archaeology, and theology mentioned below that I have noted is Piaget and Rossellò (1923).

cultural affiliation.³ 'Typology' seems to occur slightly later in linguistics (circa 1928) than in psychology, which is its probable source.⁴ Up to this time and even later, the nineteenth century morphological typology (i.e. the classification of languages of which the most common version was that into isolating, agglutinative, and inflective) was generally called 'morphological classification' as opposed to 'genealogical classification'.⁵ Since it was the only classification of the typological sort which had any currency there was apparently no need for a general term. One effect of the rise of structuralism was to broaden the topical scope of non-historical comparison to other areas of language than morphology, e.g. phonology, and also to reinterpret its role as that of structural and synchronic comparison. This situation evidently provided a function for the more general term 'typology' which was already current in other behavioral sciences.

It was stated in the introductory section that in most discussions of linguistic typology it is assumed that typology is a form of classification and we have already seen that until the rise of structuralism the only extensively used typology was called 'morphological classification'. A second very common assumption (and this one is contained in Marouzeau's definition) is that the objects to be classified or typologized are languages. While in fact most typologies proposed in linguistics have conformed to these limitations, it can be pointed out that both have at times been disregarded in actual practice. A consideration of these problems can serve as a preliminary step towards delimiting in a reasonable way the scope of the concept 'typology' as applied to linguistics.

One of the limitations of typologies just mentioned concerns the

³ While this still remains a central problem in archaeology, the recent period has seen a shift of interest to questions of ecological adaptation and of the attempted reconstruction of the general cultural pattern.

⁴ The first occurrence of the word 'typology' that I have encountered in the linguistic literature is in the theses presented by the Prague linguists to the First Congress of Slavic Philologists held in 1928 (Theses, 1929).

⁵ The reason for the apparently contemporaneous replacement of 'genealogical' by 'genetic' and 'morphological' by 'typological' classification is obscure to me.

objects to be typologized. While it is true that the word 'typology' has most often been applied to analyses in which the languages themselves are assigned typological status, e.g. statements of the kind 'Turkish is an agglutinative language', there are other possible linguistic entities which can be typologized. One set of possibilities refers to the grammatical or other properties of the languages themselves. For example, it falls well within the normal usage of the term 'typology' to apply it to Bloomfield's division of syntactic constructions into endocentric and exocentric types. One could then, it is true, ask whether all languages have both types and on this basis typologize the languages themselves. However, it is clear from Bloomfield's exposition that the center of interest is the nature of the constructions rather than the manner in which languages might be assigned in terms of the presence or absence of these construction types. In fact, there is no mention of this latter possibility. It will be shown later that all synchronic typologies have this Janus-like nature in that the same data can be utilized either for a typology of linguistic properties or for a typology of individual languages. It may be added that these alternatives exist whenever a set of individuals are characterized by a set of properties. Thus in psychology one can either be seeking types of individuals or, for example, types of intelligence, and factor analytic procedures may similarly concentrate on the structure of the properties as well as that of the individuals (so-called reverse factor analyses).

Another kind of typology in which the objects typologized are not languages, or rather not only languages, is exemplified by the work of Menzerath and his associates, in which the words of a language are typologically classified in accordance with the number of phonemes and number of syllables. Each word may therefore be said to belong to a specific type, e.g. containing 5 phonemes and 2 syllables. Languages as wholes may then be compared in terms of the frequency of the various word types contained in their lexicon. The remarkably narrow definition of 'typology' perhaps only intended for the particular application that follows does, in fact, define the objects to be typologized as words. "By linguistic typology we will understand, in what follows, the investigation of the structural conforma-

tion of the words and vocabulary of a language" (Menzerath and Meyer-Eppler 1950:34).⁶

A third fundamentally different case in which it is not languages which are typologized is that of processes of language change. Thus a division of sound changes into regular and sporadic, conditioned and non-conditioned, whatever its merits, distinguishes a number of types of changes and may very well be called a typology. Moreover, even though the material is itself diachronic in nature, such analyses are ahistoric in that they involve the comparison of examples whether historically connected or not. Thus a change from stop to fricative in Germanic and Chwana are instances of the same type of change.

The other commonly stated or assumed limitation on typologies which does not appear to be necessary is that it be classificational. By classification here is meant the assignment of objects to certain discrete classes so that, ideally at least, every object is assigned to one class and to one class only. Once again, this has been the predominant practice in linguistic typologies. However there are examples which do not conform to these limitations and which no one has ever refused to call typological on this ground.

One instance is Sapir's (1921) well-known morphological typology in which on two of his three dimensions, technique and synthesis, languages, instead of being assigned to specific categories, e.g. agglutinative or non-agglutinative, are characterized as being mildly agglutinative, highly agglutinative, etc. This procedure arranges languages on a comparative scale in regard to a certain property rather than categorically classifying them as possessing or not possessing a property.

Such scales are made explicit by the provision of a metric in the quantification of morphological typology proposed in Greenberg (1954). Thus, one of the ten indices is that of agglutination based on the text ratio of agglutinative to non-agglutinative constructions as defined there. On this basis, a language will be assigned to a value in

⁶ "Unter 'Sprachtypologie' wollen wir im folgenden die Untersuchung des strukturellen Aufbaues der Woerter und des Wortschatzes einer Sprache verstehen."

the range 0 to 1. Another example of a quantitative typology has already been cited, namely that of Menzerath. It would seem, then, since no one evidently has considered the Sapir, Greenberg, or Menzerath schemes as non-typological, that any definition of linguistic typology should be sufficiently broad so that it embraces not only discrete classifications but also arrangement of languages along dimensions with or without an accompanying metric.

The predominance in practice and to a certain extent in theory of categorical class concepts in linguistic typology constitutes a second and important point of contrast between linguistic and certain other disciplines, the first being the explicit abstraction from history. It is not here so much the factual predominance of classification as the absence of an awareness of any incompatibility between 'type' and 'class' as concepts. The probable reason for this situation is discussed in a later section (3A).

It was particularly in Germany that a powerful movement arose which sought to distinguish natural science in a fundamental way from the *Geisteswissenschaften* or *Kulturwissenschaften* insofar as the latter possessed a category of value and was interested in the individual rather than in general laws. Its beginnings may be conveniently dated from the appearance of Dilthey (1883). This movement had a significant impact on such fields as psychology, sociology, and history. The relevance of these developments in the present context is that everywhere in one form or another 'type' became the central concept of the cultural sciences as distinguished from the notion of 'class' which was viewed as characteristic of the natural sciences. Examples include Weberian sociology and a variety of 'new' psychologies including the structural psychology of Spranger. Regarding this latter Klüver, (1924: 190) remarks, "We are not dealing here with a psychology which *besides* other tasks also recognizes the tasks of type investigation, but with a psychology which in its inner core is itself *type* psychology."

Something of the 'feel' of this controversy, with its metaphysical overtones, can be gathered from Muchow (1931: 187) in which William Stern, a founder of the psychology of individual differences, for whom the concept of 'type' was of central importance, is criti-

cized in a Festschrift dedicated to him in the following fashion: "It (sci. Stern's differential psychology) uses type as a collective concept and defines it as the common prevailing mark of a group." This is rejected since "What we understand here as a genuine type is however fundamentally an 'individual form' in the sense that, just as the individual, it can only be constructed in its individuality, not from what is general, but only by an individual immanent law."⁷

In fact, linguistics, which was still in large measure German during this period, could hardly escape this raging controversy. However, it was fought in other terms than 'type' as a rival concept to 'class', namely in the opposition of humanistically oriented scholars like Schuchardt and Vossler to the more 'scientific' Neogrammarians.

It was essentially to rescue the notion of type for positivistic science that the fundamental work of Hempel and Oppenheim (1936) was undertaken. Several aspects of the then prevalent theorizing concerning type disturbed these writers: first, the assumption that since in the empirical world only imperceptible transitions existed, a class logic with its sharp boundaries falsifies reality; second, that 'type' can only be intuited by some sort of empathetic *Verstehen*; and finally, that scientific laws are necessarily based on a class logic and therefore non-attainable in type studies.

It is chiefly this last question which interests us at the present juncture. Hempel and Oppenheim's contention here is that it is only the traditional logic that is confined to categorical, that is, class concepts. Modern symbolic logic which embraces relational concepts involving two or more variables is adequate to deal with the type concept which they explicate as being essentially comparative and relational.

Thus a propositional function with one variable, e.g. x is red, defines the class of red things as those entities which may be substituted for x and result in a true proposition. A propositional function with two or more variables, e.g. x is longer than y , defines a re-

⁷ "Sie verwendet den Typus als Kollektivbegriff und definiert ihn als gemeinsames praevailierendes Merkmal einer Gruppe." "Was wir hier unter einem echten Typus verstehen, ist aber grundsatzlich eine, 'Individual'-form in dem Sinne, dass er ebenso wie das Individuum in seiner Individualitaet nicht vom generellen, sondern nur vom individuellen immanenten Gesetz her aufgebaut werden kann."

lation which holds precisely between these ordered pairs which when substituted for x and y respectively result in a true proposition. They then argue that lawlike relations, e.g. rank order correlations, among two or more comparative concepts can often be discovered and that these constitute legitimate scientific generalizations. In fact, they argue, comparative concepts can be considered a step on the road to quantification, insofar as a metric can be devised which will assign a number specifying by how much x is longer than y .

In the framework of the Hempel and Oppenheim approach, then, class concepts are seen as a limiting case within a spectrum of much broader logical possibilities and type concepts are essentially comparative concepts. However, linguistic usage of the terms 'class' and 'type' is essentially different from that envisaged by Hempel and Oppenheimer, whose point of reference is primarily psychology. In linguistics prevailing usage has been to employ 'type' for all ahistorical comparison, it being of little moment whether the underlying concepts are categorical, comparative, or quantitative, while 'class' has been used for all 'pigeon-holing' regardless of whether it involves ahistorical or historical comparison. Indeed 'classification' has even been used more loosely to include instances of comparative and quantitative scales, as in talking of Sapir's typological classification. The difference between linguistics and other fields appears with particular force in the very phrase 'typological classification' which would be a contradiction *in adiecto* for Hempel and Oppenheim.

Two factors may be seen as of basic significance in explaining these differences. Linguistics has largely owed what success it has attained to the fact that its data, whatever their physical nature may be, have been apprehended by its practitioners in discrete rather than continuous terms. The prescientific invention of the alphabet bears witness to the 'naturalness' of this approach. Hence quantification as such has little allure for linguistics and has tended to remain marginal, and discrete categorization predominates in all linguistics, historical and ahistorical. The 'unmarked' use of the term 'classification' to include non-discrete scalings is but another manifestation of this phenomenon.

The second factor that appears to have been operative is the dialectic opposition between historical and ahistorical approaches which has been a central factor in the history of linguistics. Another manner of stating this relationship is in the terminology of current ethnosemantics. The historical and ahistorical approaches are in opposition on the same semantic level, that is, they share something which underlies their differences. Since genetic classification is basic to historical linguistics, the common ground has come to be expressed as 'classification' while their opposition has been formulated as the presence or absence of the historical factor.

It would seem, then, that the two factors which most of all distinguish typology in linguistics from typology in other fields both rest ultimately on the opposition between genetic and typological linguistics, the positive aspect involving the sharing of classification-aims and the negative involving the opposition between the historical and the ahistorical. This in turn relates to the fundamental importance of genetic classification and the historical comparative method in linguistics. Although other behavioral sciences exhibit phenomena which correspond conceptually to this aspect of linguistics, nowhere else does it appear with the same clarity or lead to a fundamentally fruitful approach.

In the light of the foregoing discussion it would appear that, in terms of the Hempel and Oppenheim analysis, any logical framework that can do justice to the notion of type as actually employed in linguistics must be sufficiently extensive to embrace categorical, comparative, and metrical concepts.

The very general concept of function stated in set theoretical terms seems to be sufficiently broad for these purposes as well as providing a convenient frame within which certain basic questions regarding typologies can be raised.⁸ Viewed extensionally, a function is simply a set of ordered pairs. Thus the mathematical function x^2 in which x can only be a natural number, consists of the pairs (1,1), (2,4), (3,9) The set of those elements which may occur as the first

⁸ This approach was suggested to me in the course of discussion with Alan Bell.

members is called the domain of the function, in this instance, the set of the natural numbers 1, 2, 3, 4, ..., while the set of those elements which may appear as the second members is called the range. In this example, the range is the set (1, 4, 9, 16 ...). The value of the function for any particular member (called an argument) of the domain is that member of the range with which it forms an ordered pair. Thus the value of 3 for the above function is 9. This is commonly symbolized as follows: $f(3)=9$.

The present proposal is set theoretical in the general sense that the members of neither set need be numbers. Further, the domain or the range or both may have members which are themselves complex internally, e.g. are themselves ordered pairs.

In addition, either the domain or range set may have imposed on it some additional mathematical structuring, e.g. some ordering relation as illustrated in the first example below.

The following are a few examples designed to illustrate the foregoing statements. A very simple instance is provided by the Schleicherian morphological typology which classified languages as isolating, agglutinative, and inflective. The domain of the function will be the individual languages and the range set will have three elements, symbolized, say, as Is, Ag, and In. Examples of ordered pairs will be (Chinese, Is), (Tamil, Ag,) etc. If we wish to incorporate Schleicher's notion that Is, Ag, and In comprise a developmental ordering in time, we may specify additional logical structure for the range set, namely, a relation DEV (develops into) which is asymmetrical, irreflexive, and which holds only between the pairs (Is, Ag) and (Ag, In). In the Greenberg morphological typology, if we confine it to the index of synthesis, that is the ratio of the number of morphemes to the number of words in texts, then once more the domain consists of languages and the range contains only numbers ≥ 1 . That the range is confined to rational integers (since it is based on ratios of whole numbers) could be once more stated as part of the mathematical structure of the range set. Suppose, however, that we wished to include some other or all of the 10 indices defined in the classification. This can be accomplished by increasing the complexity of the range set by making its members ordered sets of n -tuples,

where n is the number of indices being used. If, for example, we use the three indices of synthesis, agglutination, and prefixing respectively then the values for Sanskrit of these indices will give (Sanskrit (2.59, 0.73, 0.04)) as one of the ordered n -tuples of the range of the typology as thus defined.

One further aspect of the notion of function will prove useful in its application to typology. Initially, mathematical function was defined extensionally as a set of ordered pairs, e.g. in the example given (1, 2), (2, 4), (3, 6) ... Intensionally, however, we may talk of a functional rule or operation by which given an arbitrary member of the domain set we may derive its value, i.e. the member of the range with which it forms an ordered pair.

One final proviso should be made which is of a quite different order from the formal mathematical aspects thus far considered. There would seem to be a certain 'naturalness' about the assumption that the set of domain members should be individuals while the range set should consist of properties including, on occasion, numbers, i.e. metrical properties.

A number of the questions already considered can be readily stated in terms of the functional framework just described. For example, the question regarding the individuals that are to be typologized, e.g. languages, constructions, individual lexical items, historical changes, is one which concerns the membership of the domain of the function. To consider whether the typology is a classification is, on the other hand, to raise a question concerning the properties of the range set, that is, whether its members are discrete. This is equivalent to asserting that if α and β are any two members of the range set then the set formed by their intersection (α, β) is null. What is sometimes called the dimensionality of a typology, that is, the number of separate criteria being applied conjointly, can be defined by reference to the structure of the range set, since a typology will have n dimensions if, and only if, the members of the range consist of n -tuples.⁹

⁹ More accurately, the maximum number of places (or vectors, as they might be called) is n , since some of the vectors might be undefined for certain members of the domain.

The comparative concepts considered by Hempel and Oppenheim as the basic paradigm for typological analysis can also be accommodated within this scheme. Unlike the examples just cited, the complexity will lie in the structure of the domain rather than the range. Let us assume that there is available some way of stating regarding any pair of languages which is the more agglutinative. Let A designate the two-placed predicate 'more agglutinative than'. Then the statement that Turkish is more agglutinative than Arabic will take the form $((\text{Turkish, Arabic}), A)$. The unsuitability of Hempel and Oppenheim's paradigm case for linguistics is shown by the fact that probably not a single typology ever devised by a linguist actually conforms to this model. Thus Sapir's typology with its judgements of the type 'mildly synthetic', etc., which was cited earlier as an example of a comparative scale in linguistics, and is the only one I have noted, does not in fact fit the Oppenheim model. We can see this by comparing Sapir's typology with the classical example of a comparative concept, hardness in minerals. The operational rule here is: x is harder than y , if x can scratch y and y cannot scratch x . There is no corresponding test in the Sapir typology. Even if we waive the requirement of an operational test in favor of some intuitive judgment, the conceptual ordering involved is at most a partial ordering. If two languages are adjudged to be weakly synthetic then they are perhaps to be considered roughly equal in synthesis. If one language is highly synthetic and another fairly synthetic, the first is more synthetic than the second. This kind of typological structure can perhaps be explicated by an n -point scale so that, for example, a non-agglutinative language is assigned a_0 , weakly agglutinative a_1 , etc. The comparative aspect is then expressed by a set of conditions imposed on the range set in terms of the mathematical ordering of the indices.

We may now consider more systematically some of the basic methodological and logical problems inherent in typological analysis, most of which can be discussed within the functional framework proposed here. Certain other problems which will be treated, transcend these formal aspects, e.g. the question of the overall purposes of typology.

A question which has perhaps more than any other raised difficulties of theory and practice for typological analysis has already been adumbrated in the foregoing discussion of the Sapir typology. This relates to the intensional aspect of the typological function, namely, the nature of the functional rules. Is there an effective procedure for determining the value of the function for every member of the domain? If all the members of the sets involved were numbers we could ask whether the function was calculable.

Thus for those dimensions of Sapir's typology which involve a tacit scaling, namely, degree of synthesis and technique, even assuming no more structure than a partial ordering on an n -point scale where n is quite small, there is obviously no effective procedure for assigning languages a place on the scale. This is not to deny that there is some basis, however nonexplicit, on which analysts like Sapir arrive at their judgments or that the results of different observers might not show a fair measure of agreement.¹⁰ Nevertheless the absence of explicitly stated and operationally feasible procedures does imply a degree of intersubjective unreliability. This lack of objectivity and the correspondingly intuitive nature of typological judgments has often been noted in the literature. For example, Benveniste (1952-53) in his discussion of Sapir's typology exhibits a keen appreciation of these difficulties.¹¹

However, these difficulties, which are particularly acute in typologies of the pre-structuralist period and cannot be said to have been completely overcome even at the present time, are not unique to typology. Thus the glaring absence of reliable procedures in nineteenth century linguistics is but a symptom and a consequence of the undeveloped state of the theory of linguistic description during that period. Consequently one basic value of typological linguistics is that it compels the acid test of cross-linguistic comparability for contemporaneous theories of language description. Typologies of the structuralist period have in general been closer to the standard

¹⁰ There is some question, however, about the real degree of independence of such judgments. For example, Turkish gets to acquire a 'reputation' of being agglutinative.

¹¹ For other appreciations of the intuitive nature of typological judgments, see especially Finck (1910:4) and Bazell (1958).

of an effective functional procedure but, of course, always within the limits set by general linguistic theory. Thus Menzerath's studies of phonology and structure certainly possess far more intersubjective reliability than the nineteenth century morphological typology, but they are necessarily limited by the indeterminacies inherent in the then-current theories regarding the fundamental constituents of the typology such as consonant, vowel, unit sound segment, syllable, and word.

The difficulties in establishing a well-defined set of functional rules for a typology may also involve an indeterminacy in the members of the domain though on the whole this is not as acute a problem. Where languages are the entities being typologized it is of course well-known that lack of intersubjective agreement among those utilizing data from the 'same language' may result as easily from differences in the speech varieties observed as from erroneous observations. Where text frequencies furnish the data for typologies, there are not only the usual statistical problems of sampling, but also questions concerning the particular 'style' or 'styles' of the language occurring within a sample which has been taken as representative of the language in some global sense. This has even led some to assert that typologies based on text frequencies have a greater usefulness for the study of stylistic variation than for intralinguistic differences (e.g. Householder 1960).

As elsewhere reliability and validity are not easily separated as goals. The attempt to develop operationally effective typologies cannot be dissociated in practice from the need to devise more meaningful and theoretically significant typologies. In general, the two *desiderata* of greater objectivity of procedures and an improved and more revealing analysis of the linguistic properties being investigated are closely intertwined. This latter activity is essentially one of logical analysis and the typical result of this 'substructive' procedure (to employ the term suggested in Lazarsfeld (1937) is to increase the dimensionality of the typology along with, and as a by-product of, the attempt to develop more explicit definitions of the concepts employed. Semantic clarification typically detects polysemy in the criteria hitherto used and the distinct senses thus revealed become the bases for additional dimensions.

This has been so much the case that some writers on the logical bases of typology have considered that 'type' ordinarily connotes a plurality of characteristics (Winch 1947:69) while Lazarsfeld (1937) calls a type defined by a one-dimensional typology a 'quasi-type', while 'type' proper is reserved for multidimensional schemes.

Thus to revert once more to Sapir's typology for exemplification, the modest gain in explicitness of procedure over previous morphological typologies is here put into the shade by the much greater advance involved in Sapir's reanalysis of the traditional categories. This net result is attained essentially by semantic clarification of such terms as 'inflection', 'synthesis', etc., with an accompanying introduction of a series of dimensions in place of the single dimension of earlier versions.

The problem of explicitness and validity just discussed are in intimate connection with yet another aspect of typologizing, the pragmatic factor of methodology. Methodologies bear such an intimate relation to typologies conceived in abstraction of the procedures employed by their devisors that the former can often be 'read off' from the latter. Yet they deserve independent consideration.

The recurrent kinds of methodologies may be classified roughly into three kinds: intuitive, empirical, and analytical. These latter two correspond to some degree to Winch's (1947) empirical and heuristic types, respectively.

Operationally we arrive at the notion that a particular approach is intuitive in a negative fashion. If the author does not describe a sample of languages which he examined in order to derive new hypotheses or test old ones and if he does not present at least an elementary substruction based on some kind of systematic analysis, we tend to label the manner in which he operated as intuitive. Presumably there was a background of linguistic experience drawn on by the typologist but not made explicit and, presumably also, the categories resulted from process of logical analysis, likewise not stated explicitly. Much of nineteenth century morphological typologizing may serve as examples of the intuitive approach.

An instance of the empirical approach in its purest form is factor analysis. An example relevant to linguistics is the semantic differ-

ential developed by Osgood and his associates (e.g. Osgood, Suci, and Tannenbaum 1957). The mathematical procedures applied to the data produce a set of dimensions, the so-called factors, guaranteed tautologically by the mathematics utilized to be independent. The members of the domain of the objects to be typologized are assigned values in terms of positive or negative 'loadings' on each of the factors isolated by the analysis. We have in effect, then, a multi-dimensional quantitative typology. Thus in the work of Osgood the individual items are usually words used as stimuli and each is placed in a multidimensional space consisting usually of the first three factors which account for the major part of the variance.

Another example of an empirical approach which is in closer conformity to the usual procedures of linguistics is Trubetskoy's typology of vowel systems (Trubetskoy 1929), in which such systems are classified as linear, triangular, and quadrangular. Trubetskoy's approach seems to be inductive in that empirical data concerning a large number of systems are presented and the classification appears to grow out of the data as embodying the fundamental, recurring types. Nowhere in the work are the fundamental dimensions made explicit and the logical possibilities enumerated.

The third or analytical approach does just this. Ideally, by means of an *a priori* logical analysis of a certain class of phenomena, a scheme is developed which exhausts the logical possibilities. This scheme is then applied to the empirical data.

In fact there are probably no pure cases of the analytic approach since presumably there is always a background of some prior observations just as there are no entirely pure cases of the empirical approach completely lacking in theoretical prepossession or at the least previously arrived at notions regarding observational categories. Even in factor analysis as applied to semantics, adjective scales must be chosen and these choices are undoubtedly guided by pre-theoretic hunches and expectations. Similarly even the most unstructured, the intuitive approach, probably always involves an unstated background of both observation and theoretical thinking. Nevertheless, the differences in approach just outlined do represent very real and easily apprehendable differences.

In practice, the analytic approach tends to concentrate on one or a very few examples studied in detail which become the initial stimulus for detailed conceptual analyses in order to arrive at a logically consistent structuring. Much of the present work of the generative school is of this sort. Often there is an interplay of empirical and analytic methods. What was earlier called substruction usually starts with a historically given typology essentially derived by empirical methods, and then subjects it to logical analysis in order to arrive at a systematic 'attribute space'. It often turns out that an attempt once more to fit the data into this scheme reveals unforeseen empirical linguistic phenomena which in turn lead to elaborations in theory.

From methodology, which is closely connected to initial pre-suppositions and procedures, we turn to the question of ends or purposes. It was noted long ago by Steinthal (1860:1) that the necessity for typology arises when a multitude of variable objects in the same universe are subject to investigation.¹² The existence of an abstract structural similarity between the problem of the classification of humans into personality types and the typology of language has often been noted.¹³ This analogy will prove useful here. Kluckhohn and Murray's well-known discussion of personality can provide a convenient frame for the present discussion.

These authors (1949:35) noted that "every man is in certain respects

- a. like all other men,
- b. like some other men,
- c. like no other men."

Substituting 'language' for 'man' in Murray's formulation, the goal of generalization corresponds to (a); classification, or more broadly, the placing of languages in some 'attribute space' corresponds to (b); and individual characterization to (c). We may ac-

¹² "Classification setzt eine Vielheit und dazu eine Verschiedenheit von Gegenständen voraus."

¹³ Thus Finck (1910:1) compares the relation between a typological description of a language and the language itself to that of an artistic representation and the personality of the individual being portrayed.

cordingly talk of the generalizing, classifying, and individualizing goals of typological endeavors.

The individualizing goal is to be found particularly among those who seek to define the characteristics of particular languages, a single language, or a language family, as, for example, in the 'characterological' approach of Mathesius (1928). Such attempts have sometimes been likened to portraiture, which seeks to capture the essence of the subject's individuality. Pursuing the psychological analogy, the goal is to discover in relation to individual languages that which corresponds to personality in relation to the individual.

As is frequently emphasized by those dedicated to this approach, it cannot merely be an enumeration of superficial details, but rather searches for recurrent themes corresponding to personality traits and beyond this to a postulated underlying unity. This unity is expressed by von Humboldt in these words:

Individuality shows itself rather in everything and is identical from the alphabet up to the conception of the world.¹⁴

Sapir (1924: 127) sums up this point of view as follows:

For it must be obvious to any one who has thought about the question at all or who has felt something of the spirit of a foreign language that there is such a thing as a basic plan, a certain cut, to each language. The type or plan or structural 'genius' of the language is something much more fundamental, and more pervasive than any single feature that we can mention, nor can we gain an adequate idea by a mere recital of the sundry facts that make up the grammar of the language.

For those in the Humboldtian and Whorfian traditions, this overall genius of a language is but one expression of a still deeper unity manifested likewise in the culture or national character of those who speak the language.

At the opposite pole is the generalizing approach whose aim is

¹⁴ "Die Individualitaet zeigt sich vielmehr in Allem, und ist eine und eben dieselbe von dem Alphabet bis zur Weltvorstellung" (1903-20: 5.395). Compare also Beneš (1958: 25), who criticizes Delbrueck's neogrammarian conception of language in these terms: "...so wie ein Mensch nicht die Summe seiner beschreibbaren Merkmale ist, obwohl er nur an einzelnen Merkmalen erkannt werden kann."

the discovery of lawlike generalizations in languages by drawing bounds to the concept 'possible human language' by employing typological methods in order to find out which of the logically possible types on the basis of some analysis are empirically existent and which are not; in other words, to discover universals, frequently implicational in form. Thus to take a logically simple case, in a two dimensional typology based on the presence or absence of properties ϕ and ψ in languages there will be four logically possible types of languages, those with the predicates $\phi.\psi$, $\sim\phi.\psi$, $\phi.\sim\psi$, and $\sim\phi.\sim\psi$. If, for example, no languages are found of the third type $\phi.\sim\psi$ then every language with ϕ necessarily has ψ which can be stated implicationally as $\phi \rightarrow \psi$, that is, ϕ implies ψ . An unrestricted universal based on the universal presence of a particular property ϕ and hence the universal absence of its negation $\sim\phi$, will then be a logically limiting case in which all languages belong to one type and none to the other in a one-dimensional typology.

In contrast with the individualizing goal, such an approach tends to deal with limited aspects of language rather than languages as wholes and it eschews the attempt to explain linguistic phenomena by reference to a national spirit, world view, or the like. It may also be said that it tends to stress the similarities rather than the differences among languages. It might also be thought that the generalizing view is also distinguished from the individualizing by being immanent, rather than transcendent, in that it does not go beyond linguistic phenomena in the explanation of linguistic phenomena. This is not, however, necessarily the case since the generalizing approach will often seek for higher level generalizations by adducing psychological factors which are manifested likewise in other aspects of human behavior or even animal behavior generally.¹⁵

It is often noted by representatives of the individualizing approach that what is characteristic of a particular language only becomes salient against the background of other languages and in terms of criteria of wider or even universal applicability. The study of what is

¹⁵ Psychological is meant here in a broad sense to include physiology, perception, and the higher mental processes.

peculiar or idiosyncratic is in practice difficult to separate from what common to at least a group of languages, hence a type which embraces more than a single language. This point is clearly expressed by Finck (1899) in his study of the German language as expressing in its linguistic properties a particular set of psychological characteristics also found in the German national character. To accomplish this he first posits a general typological scheme of the world's languages in which the basic dimensions are taken from temperament psychology in order to ascertain the place of Indo-European against this background and subsequently to isolate the distinctive qualities of Germanic and finally German within Germanic.

Further, acute observers who are basically individualizing in their approach, have sometimes noted that languages which are similar in certain critical respects, exhibit other 'unexpected similarities'. Again we may cite Sapir (1921:152) who notes that "Nevertheless, in numerous instances we may observe this highly suggestive and remarkable fact, that languages falling into the same class have a way of paralleling each other in many details or structural features not envisaged by the scheme of classification..." Much earlier, de la Grasserie (1890:336) was similarly struck by the fact that in languages with certain similarities which he considered basic, such resemblances "will find an echo, a mysterious correspondence in morphological and phonological coincidences".¹⁶ Such 'correspondences' would seem to be adumbrations of the lawlike interdependencies of linguistic properties sought for by the generalizer.

In spite of such points of contact, there remain profound differences which separate these two approaches, differences which seem to represent just one more example of the history-science or *Geisteswissenschaft-Naturwissenschaft* dichotomy. The individualizer seeks to understand specifically historically given phenomena, sometimes those of just one language, in all their individuality, but cannot avoid using, even if only implicitly, generalizing considerations. He uses the general, however, to illuminate the particular. The generalizer is

¹⁶ The entire sentence reads "Cependant dans ces deux langues, en général, les ressemblances psychologiques frappantes trouveront un écho, une correspondance mystérieuse dans des coïncidences morphologiques et phoniques."

only interested in particular phenomena as evidence towards arriving at general principles and not for their own sake. Hence he runs the opposite risk of overlooking the subtle differences which constitute the individuality of each language and of equating merely superficially similar phenomena.

Between these poles, there lies a considerable body of typological investigation, whose stated purpose is classificational, which neither sets out to apprehend the essence of each language's individuality by characterizing it as a whole nor, on the other hand, connects typology in an explicit way with generalization. An example of this is Trubetskoy's typology of vowel systems (1929). The generalizations deducible from the typology are not stated although others are asserted at various points in his exposition. Overtly then, this is a classification, pure and simple.

Such an intermediate position between individualization and generalization in which typology is considered essentially classificational has indeed been the most common approach in the twentieth century until the recent explicit linkage between typology and the study of universals. This view, however, raises certain problems. Classifications are presumably undertaken with some purpose, which in the case of genetic classifications is clear enough. On the other hand, typology conceived purely as classification steers a perilous course between the Scylla of the subjectivism of individualizing approach and the Charybdis of arbitrariness in the selection of criteria in the absence of a well-defined goal for classification. The justification commonly given for taxonomies is that they bring a certain ordering into the data and that where these data are numerous and complex some such preliminary step is an indispensable one. As already noted Steinthal (1860:1) pointed out in the introductory section of his study that "classification assumes a multiplicity and in addition a diversity of objects",¹⁷ but such consideration would at best justify classification in the most general sense without enabling us to decide which among the numerous possibilities are to be preferred.

¹⁷ Cf. footnote 12 above.

It remains to consider certain expressions which commonly occur in the literature of typology, including that of linguistic typology, and to explicate them in terms of the foregoing discussion. These include such words as 'typical', 'transitional type', 'pure type', 'mixed type', and 'ideal type'.¹⁸ All of these, except possibly the last, are interconnected and arise from the idea that types, unlike classes, do not have clear and unarbitrary boundaries. As was seen in the early discussion, much of the comment on types in the philosophy of science has revolved around this assumption.

The set of notions clustering about the use of the word 'typical' and 'transitional type' seems to arise in a number of distinct ways from the logical point of view. They all have to do with the structure imposed on the range set of the typological function. These include the notion of 'typical' as modal, as extreme, or as defined by a cluster of properties in a multidimensional typology. There seems to be no simple term in use to describe this last alternative. It will be called here 'multidimensional typicality'. Examples of the occurrence of the term 'typical' in the linguistic literature of typology and which will exemplify modal, extreme, and multidimensional typicality, respectively, are the following: German is a typical synthetic language (if synthesis is defined in terms of the morpheme-word ratio), Georgian is a typical consonant cluster language, and Japanese is a typical SOV language.

'Typical' as modal seems to require quantification in which the numerical values are either continuous or at least very numerous, as for numerical ratios. It is then possible to plot a frequency distribution of individual values and to consider the mathematical properties of such distributions. If the distribution shows clustering about several points, i.e. is multimodal, each such mode can be said to define a type. In the absence of marked breaks in the distribution it will not be possible to delimit the exact boundaries of each type in an unarbitrary way. A language near or at one of the modes will then be said to be a 'typical' instance of the type so characterized,

¹⁸ A further sense of 'typical' as it occurs, for example, in the expression 'a typical Indo-European language' is discussed in a later chapter. See p. 00.

while one which lies at fairly equal distances between two such modal types will be called transitional.

Sometimes, parallel to the existence of unrestricted universals for non-quantified traits, we find a unimodal frequency distribution. Hence, there is only one type and we might therefore in a somewhat odd manner talk of Hawaiian as being a deviant language in regard to the number of phonemes because of its extreme departure from the basic 'human' norm.

Where the range set consists of the natural numbers, e.g. number of noun classes or genders, maximal number of consonants forming a syllabic margin, the extreme values are often said to be typical and we have the common situation of two polar types, e.g. languages without consonant clusters and those with or close to the maximum reported for human languages.

Multidimensional typicality arises when types are defined in terms of a cluster of characteristics which do not empirically always adhere to each other. This kind of typicality is also frequently bipolar.

Let us suppose ideally a set of properties α , β , γ , and δ and their opposites $-\alpha$, $-\beta$, $-\gamma$, and $-\delta$. Then languages with the characteristics α , β , γ , and δ will be said to be typical representatives of one type and those with $-\alpha$, $-\beta$, $-\gamma$, and $-\delta$ will be typical representatives of the opposite type. Languages with some positive and some negative values for these properties will be transitional.

The basis for associating α , β , γ , and δ as a cluster of traits defining a type rather than, say, $-\alpha$, $-\beta$, $-\gamma$, and $-\delta$ may be empirical in that these traits do in fact show some form of statistical association in language. In other instances the basis will be theoretical, in that a causal association among them is deducible from some theory. In practice, of course, there may be an alternation of the inductive and deductive procedures, factual associations being first noted, and theories being invented to account for them with further empirical consequences.

In certain instances actually occurring in the linguistic literature the basis of association can only be considered arbitrary, though no doubt certain observations and theoretical considerations may be involved in some vague and implicit form.

An example is the analysis of African languages by Meinhof (1936) in which two polar associations of traits are assumed, one including such properties as monosyllabism, tonality, and isolating syntactic structure and the other polysyllabism, lack of tonalism, and an inflective syntactic structure. Given a historical interpretation, the concepts of pure and mixed types develop. A language which exhibits some of the traits of one type and some of the other is hypothesized to arise from a mixture of the polar types considered in such an analysis to be pure types.

The concept of ideal type arises when a hypothesized extreme type finds no empirical exemplification. In this sense some of the practitioners of the classical morphological typology operated in terms of largely ideal types. Thus the ideal type of an isolating language was one in which every word was morphologically simple and even those with grammatical formulation had a clearly defined lexical meaning in other contexts, e.g. the use of the verb 'to give' to express the indirect object relation. Classical Chinese was then merely the closest discernable approximation, but even it deviated in certain respects from the ideal type. Given a system with a variety of such ideal types, all languages were mixtures in varying degrees of these types, which are never found in pure form. This kind of typology is found in Weberian sociology and has been common in psychology.

For example, Hempel (1952:213) describes the Jungian extravert-introvert typology as follows:

The purely extravert and the purely introvert personalities thus came to be conceived as 'extreme' or 'pure' types, of which concrete instances are rarely, if ever, found, but which may be seen as conceptual points of reference of 'poles' between which all actual instances can be ordered in serial array.

A clear statement of this position is found in Skalička's (1946a:96) revised version of the nineteenth century morphological typology in which he posits five types but in which no language belongs exclusively to one type and each language is therefore to some degree a mixture of these types.

3. THE HISTORY OF TYPOLOGY

A. MORPHOLOGICAL TYPOLOGY

It is beyond the scope of this monograph to present a detailed history of linguistic typology. For this the reader may be referred to Horne (1966), Skalička (1958), and to the various histories of linguistics, e.g. Pedersen (1924), Arens (1955), Leroy (1963), and Robins (1967). Moreover, the treatment here is not strictly chronological. In the first of the two sections devoted to the historical aspects of our subject, the morphological typology which dominated nineteenth century discussion is considered, but its vicissitudes are followed down to the present day. The second section is devoted to the impact of structuralism on typology, which produced a thoroughgoing transformation both in its theory and in its practice. Chapter 4, devoted to a discussion of typology in relation to grammatical theory, especially current theory, is in a sense a continuation of these historical sections because it considers the possible contemporary and future role of typology within linguistics in the light of contemporary theoretical developments.

During the nineteenth century and indeed up to the development of fresh approaches to typological problems by structuralists in the second quarter of the twentieth century, the scene was dominated by what is here called the morphological typology, the classic expression of which was the threefold division of languages into isolating, agglutinative, and inflective. During this period I am only aware of two instances of proposals for typologies which show an appreciation of the other possibilities for the application of typological methods. In both of these, the proposals are merely alluded to and no serious attempts are made to pursue them further. One in-

stance is found in de la Grasserie (1890:298), who includes among possible typologies phonological classifications based on types of accent, number of syllables in the word, and a distinction between "languages which eliminate the consonant and those which eliminate the vowel", e.g. Maori and German. We then learn that Arabic would belong with the latter because the vowels are not written! This would redound to de la Grasserie's credit if we could credit him with a precocious anticipation of the notion of the morpheme, which seems unlikely.¹

The other instance is Wundt (1900:II, 436) who outlines twelve pairs of oppositions (*Gegensatzpaare*) by means of which languages might be classified. Among his examples are prefix versus suffix languages, languages with free and fixed word order, and languages with specially elaborated verbal as against nominal forms. He adds that these are of course not the only types which can be defined.

During this period then, what came to be called morphological classification (as was seen earlier, the word 'typology' does not occur in linguistic discussion until ca. 1928) virtually coincided with typology. In terms of the theoretical framework of the preceding chapter, this typology was individualizing in aim and intuitive in its methodology. The structure of the word was seized upon as in some sense central to the attempt to characterize the language as a whole. This is already noted explicitly by Schleicher (1850:211). At a much later date the neo-Humboldtian Lewy (1942:15) states that "the description of the entire grammatical system can be annexed to an exact description of the structure of the word in every language".²

In its characteristic 'Humboldtian' form, these criteria were merely outward symptoms of the 'inner form' of the language, which in turn was an expression of the spirit (*Volksgeist*) of the people who spoke the language. There was usually an explicit ethnocentric value judgement involved in that the inflectional type more adequately

¹ However, as indicated by the repeated references to it in this article, I consider that de la Grasserie's neglected essay contains for its time some remarkable theoretical insights on classification.

² "An eine genaue Darstellung der Structur des Wortes in jeder Sprache kann die Darstellung des ganzen grammatischen Systems angeschlossen werden."

expressed this form or even that other languages were 'formless'.

All of these aspects of the morphological typology are found already *in nuce* in the initial version of the theory by Friedrich von Schlegel in his work of 1808, *Über die Sprache und Weisheit der Indier*. Chronologically, this work is, as it were, intercalated between the celebrated statement by William Jones in 1786 regarding the relationship between the Indo-European languages and the work of Bopp (1816) which constitutes the pioneer application of the comparative method to genetically related languages.

Friedrich von Schlegel's classification is a twofold one, into languages with affixes and languages with inflection, and it contains already the germ of later and more elaborate classifications. Moreover, for him these were merely the outward sign of a fundamental distinction between organic form (inflection) and merely mechanical form.³ Thus the valuational attitude so characteristic of most versions of the theory is to be found right at the beginning. In a striking figure the mechanical processes of the affixing languages are likened to a "heap of atoms which every wind of chance scatters or heaps together" (1808: 51).

This twofold classification was developed into a threefold one by Friedrich's brother August von Schlegel. He outlines three classes of languages: "languages without grammatical structure, affixing and inflectional languages" (1818: 559). With this threefold division in which 'without grammatical structure' corresponds to the later term isolating and 'affixing' to agglutinative, August von Schlegel stated the theory in what was to be its most persistent and enduring form. Moreover, unlike the earlier form of the theory enunciated by his brother Friedrich, his much more detailed exposition is firmly anchored in the concept of internal structure and the external function of the word as a unit. This was also destined to be a central

³ However, von Schlegel does not employ the terms affix and inflection in accordance with generally accepted usage. For example, the function words of Chinese are considered by him to be affixes and the internal changes of Semitic not to be inflections. We may perhaps be excused if we fail to grasp clearly what von Schlegel intended by his terminology when we read in a letter from von Humboldt to Friedrich's brother August (Dec. 30, 1822) that he could never understand clearly what Friedrich meant by inflection.

feature of the theory. Just as much as with his brother, the essential distinction rests on the metaphor of organic versus merely mechanical organization. The notion of root lends itself indeed to an elaboration of this metaphor. Thus in the languages without grammatical structure the roots are sterile. Only the inflectional languages, consisting exclusively of the Indo-European and Semitic languages, have roots which exhibit a kind of organic life, a principle of development and growth. August von Schlegel, who was disturbed by the fact that the modern Indo-European languages have tended to lose the inflections found in the older stages, to account for this introduced a further subdivision between the inflectional languages, synthetic for the earlier type and analytic for the later.

The next significant treatment of this topic is that of Wilhelm von Humboldt (1825, 1836). To the three types of August von Schlegel he added a fourth which he called 'incorporating' on the basis of his wide acquaintance with American Indian languages. The most typical aspect of the phenomenon of incorporation is that the verb object is found in the same word as the verb root. To von Humboldt these were languages with 'sentence-words'. Von Humboldt was also the first to use 'agglutinative' in place of the earlier term 'affixing'.

Von Humboldt's importance, however, goes far beyond innovations such as these. His morphological typology was an integral part of an overall philosophy of language which expressed in the most comprehensive terms assumptions about the nature of language found earlier in the work of the von Schlegels and characteristic of German Romanticism.⁴ As set forth particularly in his celebrated essay "Über die Verschiedenheit des menschlichen Sprachbaues", each language is a distinct revelation of the spirit (*Geist*). Such self-revelations, while each a valid expression in its own right, exhibit lesser or greater degrees of perfection. All languages are complete (*vollendet*) but not all are perfect (*vollkommen*). Perfection

⁴ On the philosophy of language of German romanticism see particularly Fiesel (1929). The key Humboldtian concept of 'inner form' can be traced back to Herder and Goethe and ultimately to the *inward form* of the early eighteenth century Neoplatonist Shaftesbury. On these matters, see the classic work of Meinecke (1936).

of form is an ideal goal, never actually attained but most closely approached, not surprisingly, by the inflectional languages. Von Humboldt is explicit in rejecting any historical evolution in which higher types evolve out of lower types. His types are rather different degrees of the realization of the *Geist*.

It was precisely this step which was taken by the famous Indo-European August Schleicher. From him the *Nebeneinander* of von Humboldt was transferred into a *Nacheinander*. He also rejected the notion of a separate 'incorporating' group of languages, thus returning to the earlier threefold scheme. Again these changes are mere symptoms of deeper differences. In contradistinction to von Humboldt, Schleicher was positivistic in his approach to language, which he considered to be a natural phenomenon, autonomous and detached from the *Volksgeist* and changing according to its own laws, which he likened to those of plants. He viewed the three types as historical stages of development, each being evolved from the previous one. Also, unlike Humboldt, he is relatively free of value judgements and states explicitly that Finno-Ugric languages, a favorite whipping boy of Steinthal, a contemporary Humboldtian, are not inferior. Schleicher was the last of the major nineteenth century Indo-Europeanists to be concerned with typological classification.⁵ In his positivistic approach to typology, he resembled earlier Indo-Europeanists who had been likewise concerned with typological problems, e.g. Bopp and Pott.

One of the aspects of the rise of the neogrammarian school in the 1870's was a turning away from problems of typology. To them Schleicher's concept of languages as organic growths seemed but a metaphor, and a poor one at that. They were attempting to found a genuine science of laws based on rigorous methods and the discovery of sound law rested on historical comparison. Hence they saw no point to the comparison of unrelated languages and considered it to

⁵ Of course, the morphological typology still continues to be discussed after Schleicher, particularly in general works. Among the more conspicuous instances are Max Mueller (1890), whom I would consider to be chiefly a popularizer, and the American linguist, Dwight Whitney, who, however, had major reservations concerning Neogrammarian doctrines.

be useless. Moreover, in their concentration on the specific phenomena of languages, to be condemned later as 'atomization' by the structuralists, there was no room for the classification of languages as wholes.

Outside of the indifference and hostility of this new and vital school, various weaknesses in the by now traditional morphological typology were becoming evident. Criticism of its ethnocentrism became more common. For example, the American linguist Whitney (1870:362) declares "*loved* from *love* is as good a preterite as *led* from *lead* or *sang* from *sing*". Still, in regard to isolating languages he continues to speak of "this lack of resources proposed by more happily developed languages; ...thought is but brokenly represented and feebly aided by its instrument". More forthright is Sayce (1879: II, 66), who complains that "the spirit of vanity has invaded the science of language itself. We have come to think that not only is the race to which we belong superior to all others, but that the languages we speak are equally superior."

The work of von der Gabelentz on Chinese was another factor in bringing the traditional scheme into disrepute. It had always seemed paradoxical that the very model of the most primitive type, the isolating, was Chinese, with its ancient literature and high cultural development. Von der Gabelentz (1891:252) presented evidence that the isolation in Chinese was historically secondary and that it showed traces of agglutination and even inflection from an earlier stage.

The net result was that the Neogrammarian Delbrueck (1901:47) could state that the attempt to order the languages of the world into types had not led to assured results, that Pedersen (1924), whose history of linguistic science was written from the neogrammarian point of view, described it as an unsuccessful way of arriving at deeper genetic relationships, and that the eminent comparatist Meillet, in his introduction to the first edition of Meillet and Cohen (1924) after referring to the "*trop fameuse classification*" into isolating, agglutinative, and inflective languages, states that the only true and useful classification is genetic. Even the antipositivist opponents of the neogrammarians during the latter part of the nineteenth cen-

tury and the early twentieth century, such as Vossler and Schuchardt, showed no interest in it and its cultivation was left to a small group of Humboldtians, Steinthal, Finck, and Misteli.

When interest in typology revived later in the period of structuralism, it was with different aims and a different point of view. Moreover, the historical equation Humboldtianism = morphological typology no longer holds. The Neohumboldtians, e.g. Lewy, Hartmann, Weisgerber, and that unconscious Neohumboltian, Whorf, still view language as an expression of the spirit of a people and practice an individualizing approach to typology while not being particularly attached to the traditional morphological typology, while others continue it in a very different spirit, e.g. Skalička and Greenberg.

In respect to these developments Sapir in his celebrated treatment of the topic in his book *Language* (1921) is very much a transitional figure. He firmly rejects both the valuative and evolutionary aspects of the theory but he evidently feels that the structure of the word is the central consideration characterizing languages and shows sufficient sympathy with the notion of languages as an expression of the spirit of a people for the revived linguistic *Weltanschauung* viewpoint in American linguistics to be called at times the Sapir-Whorf hypothesis. He likewise shows an undisguised affinity to the Humboldtian notion of inner form while asserting that there are no formless languages. This aspect of Sapir's thought is shown most clearly when after distinguishing two separate axes of classification, degree of synthesis and technique (e.g. fusion, agglutination), he turns from these as being purely external and material and moves to what he considers a much deeper and more significant classification based on the expression or non-expression of certain classes of concepts, namely, derivational and concrete relational.

Developments subsequent to Sapir which represent recognizable continuation of the traditional morphological typology are more conveniently considered in the general context of typology in its relation to structuralism and are considered in the following section.

B. TYPOLOGY AND STRUCTURALISM

We have seen that the rise of the Neogrammarian school produced profound and essentially negative effects on typological studies. The appearance of another new and powerful movement approximately fifty years later which swept almost everything before it, namely, structuralism, could not but have major repercussions in typology as it did on virtually every aspect of linguistics. However, this influence was a complex one corresponding to the fact that structuralism was manifested in a whole series of disparate schools and independent individual investigators often at odds with each other on basic questions. It is beyond the scope of the present treatment to portray this situation in all its richness and diversity. The net result was a considerable revival of typological interests and, along with this, fundamental innovations both in method and theory. As might be expected, these took distinct forms and showed varying emphases in differing schools of structuralism. Moreover, some schools, notably the American structuralist, which in certain fundamental ways continued Neogrammarian points of view, largely ignored typology.⁶ It was chiefly by the Prague School, to some extent by the Geneva school, and among those American linguistics who were in the tradition of anthropological linguistics that typological interests were cultivated. Of the last group, we have already seen a pioneer example in the case of Sapir. To all this should be added a revival of Humboldtianism, particularly in the German-speaking world, which continued an earlier tradition of interest in typological problems.

Inherent in that which was common to all variants of structuralism, namely the concept of the synchronic state of a language as a

⁶ It is clear that the mainstream of American structuralism, as contrasted with European, inherited the basic neogrammarian outlook on historical questions, e.g. regarding sound laws, *Stammbaum* theory, etc. Its generally positivistic outlook, allied with the behaviorism of the then current American psychology, also discouraged the approach to typology through semantic categorization, which was widespread in European linguistics. Consider, for example, the citation in the following footnote.

set of relations forming a coherent structure, lay an antinomy intimately related to typological issues. Insofar as the goal was the understanding of each synchronic structure in its own terms and the avoidance of the *a priori* imposition of categories not inherent in the language itself, each synchronic state becomes a unique configuration. The emphasis is on the diversities rather than the similarities among languages. The corresponding typological approach is the individualizing one and this was the path chosen by Whorf and the Neohumboldtians in Germany. Within the Prague school the characterological approach of Mathesius (see especially Mathesius 1928) is perhaps the closest to this position.

Alternately, however, structuralist assumptions could produce a tendency towards a generalizing approach in typology. It is of the essence of structuralism that a language not be considered a random collection of traits, but rather, to cite the well-known slogan, a configuration in which *tout se tient*. From this it follows that there must be recurrent and lawlike relations among the properties of language and such clusters define types. It was this approach on the whole which prevailed in the Prague school.

In this way developments in the Prague school contributed in no small measure to the contemporary linkage of typology with the study of universals. The movement towards a generalizing approach in typology is, however, broader than the Prague school and some of its roots can be traced to other, and, occasionally, earlier traditions. In the perspective of typology as a concept common to a whole group of disciplines, what is surprising is the relatively slow and late development of the link between typology and generalization in linguistics. For example Folsom (1931:234-35) in his work on social psychology, notes explicitly the relationship between types and implicational relations among the properties defined in the typology, observing that type may denote "a group of correlated traits so that the possession of one or more of these traits usually implies the possession of the others". The consciousness of this relationship appears to be far more inchoate in linguistics during this same period.

Once more we may note a precocious presentment in the previously cited essay of de la Grasserie (1889-1890). Impressed by Cu-

vier's achievements in reconstructing fossils from fragmentary evidence by assumptions regarding the necessary connections of traits, he asserts that something similar happens in language where we find in accordance with Cuvier's 'principle of the subordination of characters' that certain salient linguistic traits are accompanied by others.

Since, however, during this period typology was synonymous with morphological typology, which as practiced by Steinthal and others incorporated an explicit linguistic *Weltanschauung* point of view, the attempt, such as most notably that of Marty (1906: especially 67-91 with its polemic against Steinthal), to revive the *grammaire generale* of the seventeenth and eighteenth century on a broader empirical basis involved an opposition to typology as then practiced.

For the earlier period of structuralism at least, two figures not affiliated with the Prague school, Brøndal and Frei, should be mentioned. Brøndal (1936, 1938) in his attempt to found a general linguistics adumbrates some of these possibilities while, like de la Grasserie, he also harks back to Cuvier. Certain characteristics always imply others, for example, singular implies the plural, the present implies the past. However, from these and other examples, it is clear that Brøndal is talking about logical rather than empirical relations, given the unspoken empirical assumption that a certain domain is always covered by language. Thus if the entire category of number is exhausted by language, then if we define 'singular' as accounting for sets with one member, there must be at least one other set accounting for the remainder,

In a noteworthy contribution, Frei (1948), a leading exponent of the Geneva school, notes that some of Trubetskoy's typological conclusions in the *Grundzuege* can be restated as laws. As formulated by Frei they are implicational, but he does not state this explicitly. Frei also alludes to the possibility of scientific laws in linguistics applying not only to language states, but also to the succession of these states in time, because there are many instances of unidirectional changes, e.g. $s > z' > r$, but not the reverse.

From this digression, we turn to developments within the Prague school in their relation to typological problems.

In some of the earliest statements of the Prague school as a whole or by individual members of it, the possibility and the importance of structural comparisons is emphasized. Indeed, it is noted as a point of superiority of the new structuralist doctrine that contrary to the limitations imposed by the Neogrammarians, in the words of Trnka (1929:69-70), structuralists employ "the synchronic method which has no need to limit itself to related languages, but can compare with each other any systems of expression whatever, can go not only from form to meaning, but also from meaning (function) to form"⁷ In carrying out such comparisons there was in the beginning an evident reluctance to employ the word 'type' because of the disrepute into which the traditional morphological typology had fallen. Hence such expressions as analytic, synchronic, or structural comparison were devised, while Mathesius coined the term 'characterology' for investigations of this sort. Eventually, however, the term typology reasserted itself and became the usual one. While there was thus general agreement that comparison of structures was possible and significant, there was equally evident disagreement as to what this consisted of. In terms of our present framework we may characterize this as a vacillation between the two poles of the individualizing and the generalizing approaches. Thus, in the theses presented by the Prague Circle of Linguistics to the Sixth International Congress of Linguists in Paris in 1948, it is stated:

This latter (sci. typology) will take account of the total structure of the languages; avoiding a reliance on isolated resemblances or differences, it will examine all its properties while taking into consideration their hierarchy.⁸

However, Skalička, one of the members of the school most concerned with typological matters, in his review article of 1958 con-

⁷ "La méthode synchronique, qui n'a pas besoin de se limiter à des langues apparentées, mais peut comparer entre eux n'importe quels systèmes d'expression, peut aller non seulement de la forme à la signification, mais aussi de la signification (fonction) à la forme..."

⁸ Cited in Vachek and Dubsky (1960:305-06): "Cette dernière rendra compte de la structure totale de la langue: évitant de s'appuyer sur des ressemblances ou des différences isolées, elle examinera toutes les qualités en considérant la hiérarchie de celles-ci."

siders that the distinguishing mark of modern investigation is that languages are no longer assigned to types as wholes.⁹ Moreover, the connection between types and implicational universals, already emphasized by Jakobson (e.g. 1941: especially 59; 1953:313), is specifically pointed out. Indeed, Skalička, in an earlier work on the Czech declensional system (1941:4), had stated: "Type is for me a collection of grammatical characteristics, which are close to each other, such that if one of them is in a given language we expect that the second will be present also, as well as the third, and so on."¹⁰

The actual practice of part rather than whole language typologies was indeed already to be found in the classic work of Trubetskoj (1929) on vowel systems, although without explicit reference to implicational universals. This work also serves to illustrate what is probably the most important contribution of the Prague school to typological methodology, namely the introduction of relational rather than absolute properties, most completely and clearly carried out in the area of phonology. In this way languages could both be said to exhibit or not to exhibit the relation of opposition between high and low vowels even though the phonetic 'realization' might be different in individual languages which presented this contrast. Relational notions, a basic concept of structuralism, could thus be employed in order to resolve the conflict between the demands of individual language descriptions and of comparability among languages. The phonetic facts of individual languages would be repeated while not sacrificing broader comparisons based on the common presence of particular oppositions. This approach is used in the Jakobsonian development of a universal framework consisting of a quite limited number of binary oppositions by means of which all phonological contrasts in language could be expressed and which

⁹ However, Skalička's point, as can be seen from his papers on Bantu and Chinese (1946a and b) is not so much, as it might seem, that typologies refer to only delimited aspects of language, since a typology based on word morphology is still central for him. It is rather that languages cannot be assigned wholly to one type or another. Moreover, in particular languages, the noun might, for example, be predominantly inflective, while the verb was agglutinative, etc.

¹⁰ "Typ je pro mně soubor gramatických vlastností, které jsou si navzájem blízké, tiji je-li jedná v daném jazyce, očekáváme, že bude i druhá, třetí atd."

has turned out to be a powerful tool for typological comparison.

Even a brief review of structuralist typology should take into account the utilization of frequency data for typological purposes which figured with some prominence in theoretical discussion. In a document produced by a group of Czech linguists (*Theses* 1957), it is even stated regarding quantitative linguistics that "so-called linguistic typology may be regarded as one of its branches, and likewise linguistic characterology, which V. Mathesius sought to establish on the basis of the comparison of structural features between a number of European languages, cannot do without an appeal to statistics".

The basic notion applied essentially to phonology was that even languages with highly similar phonologic systems might differ typologically in the way these resources are used functionally and these differences could be investigated by the study of frequency.

The work of Krámský (1946-48, 1959) is along these lines. For example, the degree of text exploitation of phonemic inventory features is calculated by a formula $V = \frac{P_i}{P_t}$, where P_i is the proportion of phonemes with a certain feature in the inventory and P_t is the proportion of the text frequency of these phonemes to the total text frequency. On this basis, for example, a language is typologically more vocalic if the text frequency of its vowels is proportionately greater than its inventory frequency.

As indicated earlier, another source of interest in typological approaches was to be found in the tradition of American anthropological linguistics. The emphasis here, at least in the earlier period, i.e. up to the 1950's, was essentially individualizing.

A favorite expression during this period was 'pattern', first introduced by Sapir into linguistic studies and then assimilated into the general anthropological vocabulary as in the classic work of Benedict (1934) on patterns of culture. The notion of type here satisfied the need for some broader conceptual framework than just the portrayal of each individual language or culture as a unique pattern, a need which always seems to assert itself in such cases. In Benedict's work the concept of polar or extreme types played an

important role. Whorfianism, a characteristic expression of cultural relativism inherent in much of the anthropology of that period, also made use of the concept of type. Thus a Hopi type was contrasted with SAE (Standard Average European) as exemplified by English. Unlike Sapir, Whorf's treatment was essentially independent of the traditional morphological typology. Also, unlike Sapir, it did not involve any attempt at the substruction of a general dimension or set of dimensions applicable in principle to all languages.

Part language in place of whole language typologies made its appearance in the 1950's in American anthropological linguistics, especially in the work of Voegelin (e.g. 1956, 1962 and Voegelin and Yegerlehner 1956), whose activities contributed greatly to the revival of interest in typology in American linguistics. This approach, basically classificatory, was confined to phonology. It did not treat phonological systems as wholes, but rather as consisting of series, e.g. stops, within which types were distinguished.

The quantification of the morphological typology by the present writer (Greenberg 1954) during this period was an attempt, based on Sapir's version of morphological typology but with considerable revisions, by utilizing the analytical tools of contemporary American structuralism, to provide the rigor and exactitude which had always been a conspicuous weakness of this kind of typology.¹¹ It was indicative of the influence of structuralism in its American form in the anthropological linguistic tradition that the particular aspect of the typology on which Sapir placed the greatest value, the expression of derivational and mixed relational concepts, was lacking in my treatment, because it involved an approach from the direction of semantics; that is, it asked the question how certain concepts were expressed. It was also an indication of the growing tendency towards a generalizing approach that questions are raised regarding the properties of a universal frequency distribution of languages arranged in accordance with the numerical indices described. This is explicitly stated (76-77): "...non-random distribution of languages

¹¹ Applications of and critical comments on this typology include the following: Bazell (1958), Householder (1960), Kroeber (1960), Pierce (1962, 1963, 1966), Cowgill (1963), Krupa (1965), Krupa and Altmann (1966).

among typological classes suggests in the first instance a connection among linguistic traits themselves." An interest, however, in typology as a means of characterizing individual languages as wholes persists in the American anthropological tradition as evidenced, for example, in Hymes' work (1961) on the typology of cognitive styles in language.

It seems undeniable, however, that the general trend, both in American and European linguistics since the advent of structuralism, has been towards the generalizing approach with its concomitant linking of the topics of typology and universals. Thus Diebold (1965:210), in his review of developments in psycholinguistics, notes that "Questions about language universals and language typology have been paired in recent decades, especially now that new trends and interests in the study of language (such as psycholinguistics) have revived a flagging concern with typology."

Finally, it should be mentioned that there has been a considerable revival of typological interest both in Slavic and general linguistics in the Soviet Union, as evidenced by a number of collections of articles and individual works (e.g. Lekomtseva 1968, Moloshnaja 1963, Uspensky 1962). Here also, particularly in the most recent work of Uspensky, the study of typology has been connected with that of universals. (See especially Uspensky (1962). Note also Vardul' (1969) which contains reports of a conference on universals held in 1965 in Moscow in which typology and universals are found both in the title and the contents of a number of the contributions.)

4. TYPOLOGY AND LINGUISTIC THEORY

One of the conclusions that might be drawn from the historical review of the previous sections is that the manner in which language is conceived by a particular school or during a particular historical period bears a significant relation to the attitude taken towards typology. Thus the Neogrammarian view of language as a totality of individual items, each of which is to be explained as the outcome of a historical process, led to a negative attitude towards typology in a period in which typology was virtually synonymous with the attempt to characterize languages as wholes. The structuralist concept of languages as an organized synchronic system possessing a certain unity naturally led to a reversal of this attitude insofar as the historical no longer appears to be the only legitimate mode of explanation. To the extent that the notion of a linguistic system constituting a unity prevailed, the interest in individual language characterization revived, while, on the other hand, the extension of comparison to include synchronic structural forms led to an emphasis on universally valid descriptive categories and generalizations about language.

The rise to prominence of the generative approach in American and, indeed, in world linguistics in the last decade or so, as well as the existence of differing models for description, both outside of generative grammar (e.g. tagmemics, stratificational grammar) and within the school as of 1970 (e.g. Chomsky, Lakoff, Fillmore, McCawley) once more raises serious questions regarding the role of typology within linguistics. In particular, this would appear to be the case in regard to the generative approach, because it involves a different concept of the nature of language itself than that which prevailed in the previous historical period. Language is now defined

as a set of internalized rules rather than a set of statements concerning surface phenomena. Furthermore, since as has been seen, questions of typology have in recent years become increasingly involved with those regarding universals, particularly implicational universals, the status of universals in this new setting will obviously have central relevance.

It should be clear from both the theoretical discussion and the historical review of the role of typology in linguistics, that the concept of type has sufficient breath and flexibility to accommodate any one of a number of theoretical approaches to languages. As has been seen, the domain of the typological function within linguistics is not even confined to language as its individual objects. Even where languages do constitute its domain, typology is always possible as long as languages have properties in terms of which they can be compared. The viability of the concept 'property of language' is thus the essential prerequisite for the construction of typologies in which languages are the objects to be typologized. In generative theory the existence of a common vocabulary and common principles in regard to the form of rules guarantees the possibility of assigning common properties to different languages.

However, while typologies are thus always possible, under certain conditions they would have little interest. Such would be the case if, under any overall approach to typology, the result of the application of any criterion would be either that all languages belong to the same type or that each language would belong to a unique type, that is, one of which it was the only member.

The former situation would indeed result from the following assumptions:

- (1) There are two kinds of universals, formal and substantive, pertaining respectively to the general organization of the grammar and its vocabulary.
- (2) Universals are only found in deep structure.

This is the view enunciated in the earliest published treatment of the topic of universals by members of the generative school (Katz and Postal 1964: esp. 159-166; and Chomsky 1965: esp. 27-30 and 118). There is, correspondingly, a complete ignoring of the topic of typology.

The first of these doctrines, that of existence of two kinds of universals only, formal and substantive, would seem to be highly restrictive in that even substantive deep structure rules, in distinction from the form that such rules take (i.e. the metarules concerning such rules), would not be included. Thus if all grammars contained a rule $S \rightarrow NP + VP$, a statement to that effect would not be a universal. That this was felt in some quarters to be unduly limiting can be seen from the following statement of Bierwisch incorporating the substance of such rules as universals (n.d.: 47-8). "This means, however, that outside of the elements with which the grammars of individual languages operate, a part of their rules also derives from a general reservoir and as substantive universals determine the human faculties which we have called *faculté de langage*."¹

We now consider the second of the two assumptions: namely that all universals are in deep structure. If we admit that substantive deep structure rules are possible material for universals as suggested by Bierwisch, the consequences will be different, depending on whether we assume the same deep structure for all languages or not. The former assumption has been called the hypothesis of a universal base.

If we assume, then, that there is a universal base, and that all universals are in the base which constitutes the deep structure, then we have precisely the situation outlined earlier. All languages belong to one type that is defined by the universal base which they all share. If all universals are found only in the base, then there are no surface universals, nor presumably are they to be found in the transformational component which produces these surface structures. Under these circumstances, typology, while permissible, is indeed pointless.

This point can be illustrated with reference to Staal (1967), in which it is proposed that the universal base should have unordered sets as its output. The surface ordering of syntactic elements would

¹ "Das heisst aber, das ausser den Elementen, mit denen die Grammatiken der einzelnen Sprachen operieren, auch ein Teil ihrer Regeln aus einem generellen Reservoir stammt und als substantielle Universalien die menschlichen Anlagen bestimmt, die wir als *faculté de langage* bezeichnet haben."

then be accomplished by transformations. If such a proposal were adopted and the notion of deep structure as the sole locus of universals likewise retained, it would follow that there are no universals of syntactic ordering whatever.

Here again, a broadening of the concept of universals in the thinking of some members of the school has occurred, and in this instance with repercussions in the area of typology. Bach (1965) in an article ("On some recurring types of transformation") dealing with relative clauses in a number of languages, tries to establish that there are a limited number of transformations which occur in this aspect of language. Depending on the choices among these possibilities, language will fall into types. Moreover, some, at least, of these transformational rules are themselves ordered through a relation of presupposition. Consider two rules, for example, such that Y presupposes X. This will mean that if any language has rule Y, it also has X, which applies earlier in the grammar. But there are languages which lack Y, although they do have X, and these will, of course, fall under a different type. It is not difficult to see here, as is noted by Bach himself, that the familiar implicational kind of universal is here being stated in terms of implicational relations among the rules themselves.

Another well-known transformationalist who takes into account the possibility of lawlike limitations on the mapping of deep into surface structures and the associated notions of typology and implicational universals is Fillmore (1968: esp. 1-2 and 61-70). Thus one of the three questions to which, according to him, scholars have addressed themselves in the search for common features in the syntax of the world's languages is the following: "Are there universally valid constraints in the ways in which deep structure representations of sentences are given expression in the surface structure?" In answer to this, he points to studies of markedness and notes: "If such studies can be interpreted as making empirical assertions about the mapping of deep structures into surface structures, they may point to universal constraints of the following form. While the grammatical feature 'dual' is made up in one way or another in all languages, only those languages which have some overt morphemes indicating 'plural'

will have overt morphemes indicating 'dual'. The theory of implicational universals does not need to be interpreted, in other words, as a set of assertions on the character of possible deep structures in human language and the way in which they differ from each other."

Bach's discussion seems to be neutral in regard to the hypothesis of a universal base, while Fillmore, in the concluding section of the passage just cited, asserts that a theory of implicational universals with empirical content need not depend on there being systematic differences in the bases of different languages, i.e. is compatible with the theory of a universal base.

If, contrary to the hypothesis just assumed, the base is not universal, additional possibilities for typological applications present themselves. The question arises whether those parts of the base which are not universal are merely random deviations or whether they take the form of recurrent alternatives, thus providing once more a basis for typological classification.

For example, as a further elaboration of the word order typology presented by Greenberg (1963) it has been proposed that languages in their deep structure ordering fall into a very small number of fundamental types (e.g. McCawley 1970: esp. 298-99; Ross 1967). On this view, of course, typologies based on such differences assume fundamental importance in linguistic theory.

However, the future of typology within linguistics is unlikely to be decided in the long run by which of a number of alternate views of the base and its relationship to universals prevails. Indeed, after a further period of theoretical development, the present framework of discussion may, as has happened in the past, become quite obsolete as a basis for discussion. There is here an empirical question. Presumably everyone will agree that there are features that are found in all languages, i.e. that are universal. There will also be agreement that all languages contain many features that are not universal and that any pair of languages differs in some respects, at least. The hypothesis that typology is of theoretical interest is essentially the hypothesis that the ways in which languages differ from each other are not entirely random, but show various types of dependencies among those properties of languages which are not invariant differ-

ences stateable in terms of the 'type'. The construct of the 'type' is, as it were, interposed between the individual language in all its uniqueness and the unconditional or invariant features to be found in all languages. If this is empirically true, then any overall theory of language must ultimately be prepared to deal with these questions in a systematic way if it is not simply to ignore basic problems.

As noted previously, the rise of generative grammar and of other at least partly similar contemporary theories, like every major development which introduces ideas about the nature of language, raises once again a question basic for typology, namely, what is it to be a property of language. The chief contribution it can make to typology is presumably to reconsider typologies in terms of new concepts concerning language. Typology will still be possible and, in fact, many of the classifications and criteria will merely be restatements of familiar classifications and criteria.² However, the use of rules rather than directly observable properties and of deep structures as theoretic constructs is capable of producing some novel results.

For example, a typology of relative clauses, as already discussed in at least preliminary fashion by Bach, would, it is true, result in types which would be, by and large, the same as those based on surface observation. However, what has been called earlier the range set, would have imposed on it a novel logico-mathematical structure based on how each member resulted from the application of different sets of ordered rules.

One other way in which contemporary models, and in particular that of generative grammar, raise questions about typology issues from the very fact that such models are considerably superior to earlier approaches in their degree of explicitness. That is, present metatheory exercises far more constraint on what will figure in the grammar of a particular language as a 'fact' about the language than earlier more 'free-wheeling' procedures.

As a result, it was easier in the past simply to equate for typolog-

² For example, Fillmore (1968) restates Sapir (1917) in which a typology is proposed regarding syncretisms in the expression of pronominal subject and object in relation to verb transitivity and voice.

ical purposes 'property of a language' with the content of some statement in the grammar of a language, precisely because in the absence of theoretical constraints on the form of the grammar, a wide variety of statements could be made without any great importance being attached as to whether it actually did or could appear in the grammar. However, the powerful and carefully formulated constraints being put on grammars bring with them a situation in which certain very common sorts of statements commonly made about languages for typological purposes in the past will not figure in any immediately discernible way in the grammar. Thus, a grammar of standard French written on the generative model will probably not state anywhere that French has two genders, or that it has a certain number of phonemes. No doubt it will be possible to deduce such 'facts about French' from a generative grammar, but presumably, since the overall purpose is to incorporate in explicit form the linguistically significant generalizations about French, perhaps such statements are simply not linguistically significant generalizations. On the other hand, it would seem wiser not to rule out *a priori* the possibility that such properties might be typologically fruitful.

One might go still further in pointing out that the concept 'property of a language' is considerably broader than 'generalization stated in a grammar' by noting that there are, in the common usage of the term, many properties of languages neither overtly stated in grammars nor logically derivable from grammars, e.g. the statistical properties based on texts which have been used so often in the past. Again, it would seem to be a somewhat incautious move to wish to exclude such properties *a priori*, since it is clear enough that some of them exhibit lawful interconnections with properties which do figure in grammars. For example, the theoretical importance of hierarchies involving an opposition of marked and unmarked members is widely recognized. It is also a fact that in general there are frequency relations in languages in terms of which the unmarked is the more frequent. It seems arbitrary to omit considerations of such frequency properties in attempting to develop a more general theory of marking.

5. TYPOLOGY AND DIACHRONY

The definition of typological investigation by Marouzeau, cited in the introductory section of this paper as "that which defines their characteristics in abstraction from history", represents what may be presented as a widespread but far from universal contemporary consensus regarding the relation between the typological and historical study of languages. It is on this basis that there is fairly general agreement that, given the independence of typological and genetic criteria, there is no contradiction in the fact that closely related languages might be separated in some particular typological classification, while languages only remotely or not at all related are classed together. Moreover, there is no reason why a typological characteristic should not itself involve an historic fact about the language as long as no assumption is made that the properties found in the languages are themselves historically connected.

For example, in Stewart's (1962) sociolinguistic typology, historicity is itself a criterion, one which is present in English and Krio, but absent in Volapük.

Again, in the sort of dynamic typology to be discussed in greater detail later in this section, languages with the phonetic segment $?y$ (a laryngealized high front glide) could be typologized in accordance with whether this segment arose from a former palatal implosive as part of an implosive series consisting of $?b$, $?d$, etc., or as part of the general phenomenon of glottalization of sonants, in which case it is usually a member of a set containing $?w$, $?m$, $?n$, etc., and accompanied by glottalic pressure stops $p?$, $t?$, etc. It is true enough that the presence of other members of the series, or of morphophonemic alterations between $?j$ and $?y$ are synchronic phenomena which could be utilized in most cases for typological assignment. However,

this would obscure the basic insight that generalized processual comparison of a large number of languages shows that *?y* arises in two distinct ways and that the strictly synchronic trace, if any, that is left depends in general on the age of the change and other contingent phonetic developments within the overall systems. The point to be made in the present connection, however, is that if we decide to classify two languages together because both have *?y*, which can be considered to have come from *?j*, this does not imply that the phenomena are historically connected with each other in these languages. The changes themselves may very well be, and in fact usually are, historically unconnected events in different language families or chronological periods.

The view just outlined, of the logical independence of genetical and typological definition, although now so generally accepted that it might be called 'orthodox', did not always prevail. During the nineteenth century the assumption was generally made that languages which were classified together typologically could ultimately be shown to be related genetically.

Schleicher seems to have been almost alone during this period in insisting on the absence of any necessary connection between the two. He asks (1859:37-38): "Would it not be possible that while one language said *varkasas adanti* (Proto-Indo-European), the other expressed the same thing by *vark ad*? In that case the two languages would be related, but, viewed morphologically, belong to two different classes. The relationship of languages is not necessarily connected with their agreement in morphology and the latter cannot serve as proof of relationship."¹ It has been noted earlier that until ca. 1930 the word 'typology' was not in use in linguistics, and the only widely employed typology was called morphological classification.

¹ "Ware es nicht möglich, dass, während eine sprache sagte *varkâsas adanti* (indogerm, ursprache), die andere dasselbe etwa durch *vark ad* aus drückte? Dann waren die beiden sprachen verwant und gehörten doch, morphologisch betrachtet, in zwei verschiedene classen. Die verwandschaft der sprachen ist mit irer morphologischen übereinstimmung nicht notwendig verbunden und die letztere kann nicht als beweis der verwandschaft dienen." Of course, *varkasas adanti* is 'wolves eat' in Schleicher's reconstructed PIE.

According to Beneš, Schleicher's viewpoint was considered 'heretical' (*Ketzerei*) at the time, and was answered by Steinthal.²

The preponderant majority of linguistics later in the nineteenth century were Neogrammarians insistent on concrete evidence of relationships of the kind that were found in Indo-European studies. It seemed to them that the assumption of genetic relationships based exclusively on typological similarities could not be sustained. Since they generally saw no aim for typology beyond this one, the failure to prove this case was an important factor in the decline of morphological typology and led to the situation, alluded to earlier, in which Pedersen, a historian of linguistics with a strongly Neogrammarian point of view, simply sees typology as an attempt to classify languages on the basis of incorrect premises.

It was structuralism which, by rehabilitating typology as structurally synchronic comparison in contrast to the diachronic comparison of genetically related languages of traditional historical linguistics, ushered in the modern view of the two as separate and independent approaches. This conclusion was strengthened by the concomitant development of a whole series of new typologies, for example, phonological, in place of the virtually unopposed dominance of a single typology in the earlier periods. Since these all gave different language classifications, it was clear that not all of them could coincide with a 'true' genetic classification and, indeed, the conclusion that none of them did was rather obvious.

Yet the relationship between typology and diachronic considerations is far from exhausted by the single question whether typological and historical classifications necessarily give the same results, which, it now seems clear, they do not. The general type of question is one with an obvious parallel in the discussion of the anthropological problem of the relations among race, language, and culture. At the time when Boas wrote his classic work, *The Mind of Primitive Man* (1911), many scholars made unjustified assumptions about the identity of racial and linguistic classifications and even used such

² In his positivistic approach to typology, he resented earlier Indo-Europeanists who had been similarly concerned with typological problems, e.g. Bopp and Pott.

terms as 'Germanic race'. Boas essentially established the independence of these modes of classification, yet, as has now been realized for some time, although classifications need not coincide, this does not mean that there are no causal connections among the phenomena concerned.

The basis for the connection between typological and genetic phenomena in languages can be stated in the following manner. Every language is typologically identical with itself in any typological classification, just as it is genetically identical with itself. Closely related languages are more likely to be typologically similar than remotely related languages or those not related at all. The extent to which this holds will be relative to the particular typology involved. Given two typologies concerned with the same data, it is obvious that the application of the 'finer-grained' typology, that is, the one with the larger number of typological classes, will produce results less in agreement with genetic classifications. There being more classes, the probability that closely related languages will have come to belong to different classes increases. Another basic factor is the relative historical stability of the criteria employed. Let us hypothesize two typologies, both of the simplest possible type logically; that is, monocriterial with two values, α and β . Suppose that in typology A the states α and β are very unstable, e.g. on the average, languages will change from one to the other in approximately 100 years. In typology B, the states are far more stable, e.g. a language will change from one to the other in about 3,000 years. On the basis of typology A, closely related languages will differ from each other almost randomly and there will be scant congruence between such a typology and genetic relationship, while in the latter case, the resemblance will be far greater. A third factor is the differential stability of the states themselves within a given typology. Let us once more posit typology with two classes, and let us suppose that one state is far more stable than the other; such differences appear to be very common and to constitute an underlying factor in synchronic universality. Let us call the very popular state α and the unpopular one β . Then if the proto-language of a particular group was in state α , the probability is great that most or all of the descendant languages would

agree typologically by still remaining in this state, while no such result would ensue if the proto-language had been in β . By the same token, however, the popularity of α will bring it about that languages only distantly related or that unrelated languages will agree typologically with each other in having α . Languages with β will appear as sporadic and fairly random exceptions to a near-universal.

What has been considered up to this point in the discussion is the attempt to use typological methods to assist in the discovery of more distant genetic relationships than those discoverable by genetic methods proper. There is, however, the opposite side of the coin. Given the literal infinity of possible typologies, there develops a search for unarbitrary or 'natural' typologies. The criteria of naturalness can be sought in two directions, synchronic implicational laws or some kind of historical significance. In a science which already has a strong historical component or is essentially historical, the attempt to distinguish 'natural' types from 'artificial' types by some test of historical relevance is easily understandable. For example, Krieger (1944:273), in regard to archaeology, a thoroughly historical discipline, characterizes the 'true typological method' as that "wherein types are taken to be specific groupings of structural features which have proved historical significance".

The corresponding method in linguistics is to consider those classifications as 'natural' which arise from the application of the historically most stable criteria. Such attempts in the past have not been based on empirical studies of the actual stability of the criteria employed. Rather, a classification is carried out on the basis of criteria assumed intuitively to be significant on some notion of synchronic functional importance, e.g. word structure, and the assertion is then made that these characteristics are highly stable and their assumed historical stability is taken as further confirmation of their true significance. For example, Sapir states that his most significant axis of classification, that which is based on the presence or absence of derivational and mixed relational concepts, is also historically the most stable.

The question at issue is really the following. Are there eternally stable linguistic traits which are not universal? These two require-

ments must both be fulfilled. For if they *are* universal, then they cannot lead to a typology, while if they can change, then to the extent to which they are changeable they lose historical significance. The assumption that there are eternal non-universal traits is inherent in a certain type of reasoning which has sometimes been employed by linguists. The following may serve as an illustration. Maspero denied that Vietnamese could be an Austroasiatic language, because Vietnamese was tonal and the other languages generally agreed to be Austroasiatic were not. The basic assumption here is that a certain trait, in this case tonalism, or its absence cannot change over the course of time. Otherwise, there would be nothing incompatible between the tonalism of Vietnamese and Austroasiatic affiliation. Hence, there are two traits, tonalism and its absence, both non-universal and both eternal. It may be noted in passing that such assumptions are incompatible with linguistic monogenesis. Haudricourt later showed convincingly how Vietnamese became tonal. In general all traits concerning which such assumptions have been made turn out to be changeable on the basis of reliable direct or reconstructional historical evidence.

The Austroasiatic example illustrates another and related point. Maspero is here characterizing a particular genetic family, Austroasiatic, by the presence of a particular typologic trait, nontonalism. This approach has sometimes been carried out in greater detail for particular language families, most commonly Indo-European. The attempt is made to define or delimit a family by the possession of a cluster of typologic traits. A well-known example is Trubetskoy (1939) in which Indo-European is defined by a number of typologic traits. Since none of these are completely stable, there is the strange result that if an historically Indo-European language loses one of these, it ceases to be Indo-European. Moreover, as pointed out by Benveniste (1952-53:110), on the basis of Trubetskoy's definition Takelma, an Oregon Penutian language, would be classified as Indo-European. This approach easily leads to the assumption that languages within the family as defined on the usual genetic grounds, which do not exhibit all of the posited typological characteristics, are in some sense deviant or atypical, and this deviance is to be ex-

plained by mixture or substratum. For example Hartmann (1956: 17), in his work on the typology of Indo-European, states that obvious mixed languages like Hittite, Tocharian, and Irish are not considered.

Thus certain Indo-European languages, e.g. Greek, Sanskrit, are typical and others are not. Is it possible to give some objective content to this notion even if we reject the foregoing approach? There are indeed here a number of significant and empirically researchable kinds of questions. One of them is the following. Within a language family are some languages more conservative than others when compared to the ancestral language, i.e. have changed more or less from this historically determined base? If so, then the more conservative languages may be considered more typical. However, a clear-cut objective answer on an overall basis is not easy to attain. Languages conservative in certain respects are innovative in others. Moreover, there is a strong tendency to take certain languages as 'typical' on unproved assumptions, and even to use its supposed typicality as a basis for reconstruction, thus producing a circularity. For example, traditional comparative Semitic studies tended to consider classical Arabic as highly conservative and then reconstruct Proto-Semitic in such a manner that it was very close to classical Arabic. This could then be used as an argument that classical Arabic was the most typical Semitic language in the sense of being historically the most stable.

A second variant of this kind of interpretation raises another problem of great interest. Rather than solely taking resemblance to an ancestral language as the criterion of typicality, one may also consider widely shared resemblances within a single family based on similar parallel processes of change. On this view perhaps, since the wide-spread tendency in Indo-European is to lose the case system, Persian and English become more typically Indo-European than Lithuanian or Icelandic!

We see, then, that there are a number of empirical problems of considerable interest which concern process of change in related languages. The upshot of the preceding discussion is that the old approach to the relationship between typological and genetic lin-

guistics, which either uses typological criteria to arrive at supposed genetic connections or seeks to choose among variant typologies by choosing historically stable, as it were 'quasi-eternal', traits in order to characterize genetic families typologically, is theoretically unsound. It is possible, however, while maintaining a clear distinction between typological and genetic criteria and classifications, to investigate the very real problems which gave rise to these attempts. Moreover, a basic tool for these studies turns out to be an aspect of typological studies which has been relatively neglected, both in theory and practice, namely change of type.

Such study of change of type may be called dynamic or processual, since a process is simply a class of similar changes. In a fundamental contribution to the question of the theoretical relationship between typological and historical linguistics, Jakobson (1958) urged that the results of synchronic typology be used as a touchstone for the validity of historically reconstructed linguistic systems. This is an important and legitimate point. It is possible, however, to shift one's center of interest from synchronic states as such (and a proto-language is a conjectured synchronic state) to the process of change from one state to a chronologically later one in consonance with Saussure's fruitful notion of the diachronic as the succession of synchronic states.

In such an approach, the domain set for typology becomes not a set of languages, but specific linguistic changes whether these changes are historically connected or not. Moreover, just as synchronic typology is connected with synchronic universals via the empirically discovered limitations to the logically possible types, so diachronic typology turns out to be connected to diachronic universals by the empirical verification of limitations on the logically possible transitions among states.

In order to illustrate more concretely the forms that these possibilities may take, it will be convenient to distinguish four methods whose differences are chiefly pragmatic in that they vary to some extent in aim and in the basis for selection of relevant languages. These methods may be called the dynamicization of typologies, the dynamicization of subtypologies, the intragenetic and the interge-

netic method. Each of these will be briefly characterized and illustrated.³

In the dynamicization of typologies, we take as our point of departure a typology theoretically applicable to all the languages of the world. The n classes of languages defined by such a typology may be called language states. The question raised by dynamicization is the existence and manner of the $n(n-1)$ logically possible transitions from any state to any other state in either direction. We may call this a state-process model. Since *ex hypothesi* all languages of the world are covered by the typology, strictly speaking all languages are relevant and in practice sampling becomes necessary. However, limitations on a basis other than random sampling are possible by the selection of particular kinds of typologies which require a far smaller relevant sample for studies of change of type or by limiting the study to a portion of the typology.

An example is the study of vowel systems. Since all languages have vowels, a typology based on vowel systems will embrace all of the world's languages. Of course, many typologies of vowel systems are possible and each defines state and hence process differently. Suppose we choose a very simple typology such as that defined by the presence or absence of oral and nasal vowels respectively. There will be only two empirically found states of the four theoretically possible ones, namely, languages with oral and without nasal vowels, and those with both oral and nasal vowels. There are no languages with only nasal vowels and none without at least one of the two types, since in that case it would have no vowels at all.

There is clearly a hierarchical relation of marking here in that nasalized vowels are the marked category whose presence implies oral vowels. This means that it will be natural to view the two logically possible transition states in terms of the acquisition and loss of the marked feature of nasality. This also has the consequence that a large number of the world's languages, even though all are included in the overall typology, may be considered irrelevant to the investigation, namely, those which by internal or comparative evidence do

³ The following exposition is largely a summary of Greenberg (1969).

not appear to have acquired or lost nasality recently. Another way in which the relevant sample can be reduced to more manageable proportions is to single out a particular subtype within a complex typology and investigate transitions to and from this type.

The connection between the dynamicizations of the typologies and diachronic universals can be illustrated by a consideration of one of the topics mentioned previously, the change from the type of language which has oral but no nasal vowels to the one in which both oral and nasal vowels are found. The study of a number of instances in which languages have acquired nasal vowels reveals a typical course of events. A previously oral vowel becomes nondistinctively nasalized by a preceding or following nasal consonant. The nasal consonant, the former conditioning factor, is lost and the oral and nasal vowels are now in contrast. If this can be shown to be the only way in which nasal vowels arise we may call it an exclusive origin theory. This can be restated as a diachronic implicational universal. The existence of nasal vowels in a language implies that at some time in their history, if their origin can be discovered, they developed from the loss of nasal consonants in the environment of nondistinctively nasalized vowels. The sequence of events can be schematized as follows, where sequential symbols are meant apply in either order: $VN \rightarrow \tilde{V}N \rightarrow \tilde{V}$.

Such a theory in effect accounts for changes from one type to another by a further elaboration of the original typology. It does this by interposing one or more types as transitional, for example, in this case languages with $\tilde{V}N$. However, since the original typology was by definition exhaustive, this new type must be either a subtype of one of the original types or cross cut them. In the present instance, if we define our types phonetically, then languages with allophonic \tilde{V} adjacent to N belong to the type of languages with both oral and nasal vowels. Hence we have subdivided the original type into these languages as against all the rest. In the new typology a structure has been imposed on the range set, which grew out of the diachronic process investigation. This new structure is one of processual priority of the subtype with $\tilde{V}N$.

The existence of such sequentially ordered subtypes is, of course,

a strong limitation on the possibilities of type change. Just as in synchronic studies limitation on the set of empirically attested types as compared to the logical possibilities leads to synchronic universals, so the limitation in possible transitions between states leads to diachronic universals.

The second method is the dynamicization of subtypologies. In this method we take just one subtype within a typology of universal application. Such a subtype will usually be defined by the presence of a marked feature. For example, it would seem more natural to choose all the languages in the world with numeral classifier systems or glottalized consonants than those without them. By comparison of changes in historically independent examples, whether such changes are deduced from internal reconstruction, the comparative method, or direct historical attestation, we seek to construct a dynamic life history of the changes which such a type undergoes from its origination to its disappearance. Unlike the previous method all the languages of the subtype will be relevant. Corresponding to the imposition of further typological subdivisions in the original type in the first method, there will result from this method further subdivisions of the original type and of a more elaborate kind. Moreover, even in the simplest instance it is unlikely that a single set of ordered subtypes will result.

The third method, intragenetic comparison, differs in significant ways from the first two methods. Our example is drawn from a genetically defined family or subfamily and the linguistic traits studied often involve sound and meaning simultaneously, unlike the 'normal' situation in typology. This may be illustrated from the history of the Slavic noun declensional system. The vowels *ĩ* and *ũ* (the so-called *jers*) were always lost in word final and under certain conditions in other positions within the word. The result of this phonetic change was that a fairly large proportion of nouns now had zero in the unmarked category of the nominative and outside of masculine animates in the accusative singular, where, on a synchronic basis, zero is very commonly found, but also, and for the vast majority of nouns in the genitive plural, a marked category which usually has an overt mark. However, two declensional classes, one

of them very small, the old masculine *u* stems, and one minor but well-established class, the *i* stems, still had overt endings after the change endings which may be schematically represented as *ov* and *ej*, respectively.

There were thus three alternants of the genitive plural: *zero* ~ *ov* ~ *ej*, and we would predict that for a marked category the latter two will gain at the expense of zero. On the other hand, we will expect that the zero of the nominative singular will maintain itself or even spread at the expense of overt affixes in this category. A number of additional hypotheses can be developed, for example, that *-ov* which started with masculine nonpalatalized ('hard') *u* stems will be acquired by other masculine declensions sooner than by palatalized ('soft') declensions. Such an assumption leads to diachronic implicational hypotheses, for example, that the spread of *-ov* to the masculine *-jo* stems (a 'soft declension') implies its previous spread to the masculine *-o* stems (a 'hard declension'). Such hypotheses, while framed in terms of the specific phenomena of a genetically delimited group, are intended as localized representatives of universal hypotheses applicable to any language family in which the same general conditions are fulfilled.

The last method, that of intergenetic comparison, involves the testing of reconstructions not in terms of the typological plausibility of the proto-system as a static entity, but in regard to the plausibility of the dynamic succession of types posited by the same reconstruction. This involves comparison with similar developments in historically independent cases. An instance is the testing of Indo-European laryngeal theory by means of the hypothesized changes of the laryngeals compared to other documented or hypothetical cases. For example, it is assumed in IE that when a laryngeal is lost a preceding vowel is lengthened. A comparison with Coptic, which had lost laryngeals found in the earlier states of the language, shows similar developments in these and other instances.

The intergenetic method is, in the final analysis, identical with the first method, the dynamicization of typologies, in that both are studies of change of type involving the comparison of historically independent cases. The difference is a pragmatic one of basic aim.

The intergenetic method seeks to verify and perhaps modify reconstructions in the light of the comparisons undertaken, while the method of dynamicization of typologies seeks general principles by the confrontation of independent cases of the same change of type. All of the methods under discussion may be considered as the application of the comparative-historical method on a higher plane in which comparisons, confined in the traditional manner to single genetic groupings, become single instances within the broader dynamic type.

The methods outlined in the foregoing section seemed to emphasize the significance of process as against state. However this apparent priority was at least partly a function of the context in which it was introduced, namely a discussion of diachronic typology and diachronic universals. That universals based on the limitations of synchronic states exist is, of course, well established and they have been the essential focus of theoretical interest and discussion up to now. The question of the interrelation of state and process regularities and of the possible priority of one over the other is a central problem in linguistic theory. It is unlikely to have a simple one-sided answer. The basic preliminary task is to analyze more closely the points at issue and to set up concrete and testable hypotheses.

Let us first characterize in a general way what an approach which accords priority to one or the other aspect would be like. In attempting this I will confine myself to phonology where the issues seem somewhat clearer and where our empirical knowledge regarding process and state is probably greater than elsewhere. This important limitation should be kept in mind throughout the course of the following discussion.

The priority of state over process in regard to general linguistic regularities is probably most strongly expressed by Saussure, the great pioneer of structuralism as, for example, when he states that: "Diachronic facts then are particular; a shift in a system is brought about by events which not only are outside of the system but are isolated" (1959:95). Although subsequent structuralism to a considerable degree mitigated the stark Saussurean opposition between the synchronic and diachronic points of view, it was part of

the very core of structuralist doctrine that the central regularities of language were represented by organized synchronic states.

In phonology the basic synchronic relation is contrast or the lack thereof. A phone can only contrast with another phone within the same time state. This inevitably leads to some variety of 'taxonomic phonemics' in which contrast plays the key role. No two utterances are phonologically distinct unless there is phonetic contrast.

How then from such a viewpoint is phonological change to be evaluated? It is probably Martinet among structuralists who has most clearly articulated the consequences for theories of linguistic change of a synchronic structural approach. The most fundamental assumption here is that the types of changes which occur are to some extent conditioned or limited by the synchronic structures in which they arise. Two main principles which are involved in the more specific thesis emerge from such an approach, the first being the tendency to preserve the existing system of contrasts and the second that of the optimality of symmetric systems.

An example of a general thesis stemming from the first of these is the hypothesis of functional yield. Less important contrasts are less likely to be destroyed in linguistic evolution than more important ones. A second is that a particular change to merger will tend not to occur until the goal of such merger has itself shifted. Thus a geminate *ss* will not be simplified to *s* until the then existing *s* has already shifted to some other sound, e.g. *z*. Or again, contrasts will be preserved but with a shifted focus in the chain of speech when a former allophonic split becomes 'phonologized' through merger or loss of the conditioning factor. For example, former palatalized allophonic variants before high front vowels may become contrastive because of a merger of these vowels with non-palatalizing vowels. Hence contrasts formerly implemented by vocalic differences continue to be implemented but by the contrast between palatalized and non-palatalized consonants.

The second principle mentioned above was the preference for structural symmetry. In a particular system with its symmetries and asymmetries those changes will be favored that increase symmetry. For example there will a tendency toward changes which fill the

'holes in the pattern'. Hence also the occurrence of large scale shifts such as those embodied in Grimm's first law. Where the unit of change is the feature, the overall symmetry of the system will be maintained, and unless whole series merge with each other, by the same token existing contrasts will be maintained.

The principle of symmetry seems to have a certain priority over the thesis of functional yield. Thus English *θ* and *ð* do not merge in spite of their negligible functional yield of this opposition, presumably because such a change would destroy the symmetry of the system in which the voicing contrast is a fundamental element.

The opposite notion of the priority of process over state can be deduced from T G phonological theory on the basis of the explanatory priority accorded to rules. These rules of course largely recapitulate historical changes. The phonologic structure of the language as a whole after the application of each rule receives no explicit recognition and in fact such intermediate states are not to be considered as levels from the theoretical point of view.

The relation of T G phonological theory to the thesis of the explanatory priority of process over state can be illustrated from Halle's now famous example of the devoicing of final obstruents in Russian. The rule of devoicing operates as a single rule whether the voiced obstruent did or did not have an unvoiced obstruent contrasting with it previous to its application. Such a rule translated into historical terms shows a change of considerable generality proceeding in disregard, as it were, of the synchronic structure of contrasts to which applies. Note that in this case to deny the theoretical significance of a classical phonemic level becomes equivalent, interpreted historically, to the denial of the existence of a state in which the change had only proceeded piecemeal, neutralizing, say, the contrasts between existing phonemes but not yet acting on phonemes without correlative contrasting partners to produce new allophones.

The process-state approach outlined earlier is distinct from that of T G phonological theory in spite of the overall similarity deriving from a general dynamic approach in both cases. It frankly embraces real history based on all relevant evidence including that derived

from comparative method, internal reconstruction, documented history, and processual information derivable from changes in progress as shown by 'dynamic synchronic' phenomena such as free variation. Moreover it accords equal theoretic significance to states and to processes and leaves their interrelationship open for empirical investigation.

The essential reason for including the present topic in a discussion of typology is that such a state-process approach has implications for a fundamental problem of typological method, one that has been mentioned earlier. What do we mean by a typologically relevant property of a language? For example, in a typology of vowel systems should we assign a language to a particular type on the basis of the phonetic level by phonemes derived through some particular set of canons of phonemic analysis, or in accordance with phonologic deep structure?

If we are talking about vowel *systems* then of course we are talking about states. The proposal that seems appropriate is that *every* reconstructible state is an example of a synchronic state that existed at some particular time so that depending on the extent to which historical methods are applicable as well as the eventfulness of its history, every language potentially contributes a whole series of synchronic states on the basis of which we may arrive at generalizations. There are, of course, certain inherent limitations to the depth and reliability of reconstructed states particularly where only internal construction is available as a method, but with reasonable precautions, this should be a small price to pay in comparison with the enormous increase in data relevant to generalization thus obtained.

Finally it may be noted that such a conception of typology in its relation to universals accords a central and integrated role to historical comparative linguistics within the overall enterprise of the search for significant types and valid generalizations concerning human language.

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